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FM 11-117

DEPARTMENT OF THE ARMY FIELD MANUAL

SIGNAL SUPPORT COMPANY

HEADQUARTERS, DEPARTMENT OF THE ARMY
MAY 1965

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *3 July 1968*

SIGNAL SUPPORT COMPANY

FM 11-117, 28 May 1965, is changed as follows:

Page 3. Paragraph 2*b* is superseded as follows:

b. Unless otherwise specified, the material presented herein is applicable to—

(1) General war, including consideration for the employment of and protection from nuclear munitions and chemical, biological, and radiological agents.

(2) Limited war.

(3) Cold war, including stability operations.

Page 3. Paragraph 2.1 is added after paragraph 2 as follows:

2.1. Table of Organization and Equipment

This field manual is based on TOE 11-117G, which has two variations in both its personnel allowances section and its equipment allowances section. These are variation SRC 11117G710 (SRC-10) and variation SRC 11117G720 (SRC-20).

a. TOE Variation SRC-10. Under TOE variation SRC-10, the signal support company is authorized medium capacity radio relay assemblages (AN/TRC-110, AN/TRC-117, and AN/TCC-61), and has a total personnel authorization of 341. When sufficient quantities of these equipments are available for issue, personnel and equipment may be authorized under this TOE variation. Essential personnel and equipment applications, that are necessary to incorporate medium capacity assemblages, are described in appendix C.

b. TOE Variation SRC-20. Under TOE variation SRC-20, the signal support company is authorized currently available radio relay assemblages (AN/MRC-102, AN/MRC-103, and AN/MCC-6), and has a total personnel authorization of 350. Chapters 2 through 4 of this manual, which describe the principal mission operations of the company, are based on this TOE variation.

Page 3. Paragraph 3 is superseded as follows:

3. User Comments

Users of this manual are encouraged to submit recommended changes or comments designed to improve its clarity or accuracy. Comments should be prepared in accordance with AR 310-3 and keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and to permit complete evaluation. Comments should be forwarded direct to Commanding Officer, U.S. Army Combat Developments Command Communications-Electronics Agency, ATTN: Chief, Doctrine Division, Fort Monmouth, N.J. 07703. Originators of proposed changes that would constitute a significant modification of approved Army doctrine may send an information copy, through command channels, to the Commanding General, U.S. Army Combat Developments Command, to facilitate review and followup.

Page 3. Paragraph 5*a* is superseded as follows:

a. Augment the capabilities of the theater army and army area communications system as required.

Page 3, paragraph 6*a*(1). In line 2, "carrier" is changed to read "multiplexer."

Page 4, paragraph 6*b*. In line 2, "and religious services" is changed to read "religious, and finance services, and for supplemental transportation."

Page 4. Paragraph 8 is superseded as follows:

8. Basis of Allocation

The signal support company is allocated on three bases. These are:

a. As required per signal group, United States Army Strategic Communications Command—Theater (USASTRATCOM (Thtr)); or field army signal brigade.

b. One per signal group, independent corps.

c. One per independent division or comparable size task force.

Page 5, paragraph 10*a*. In line 4, "(fig. 1)" is added after radio platoon.

Page 5, paragraph 12. In line 10, "carrier" is changed to read "multiplexer."

Page 5, paragraph 12*a*(1)(*c*). In lines 1 and 2, "powerman and one powerman helper" is changed to read "general purpose power generator operator/mechanic and one power generator equipment apprentice."

Page 6. Figure 1 is superseded as follows:

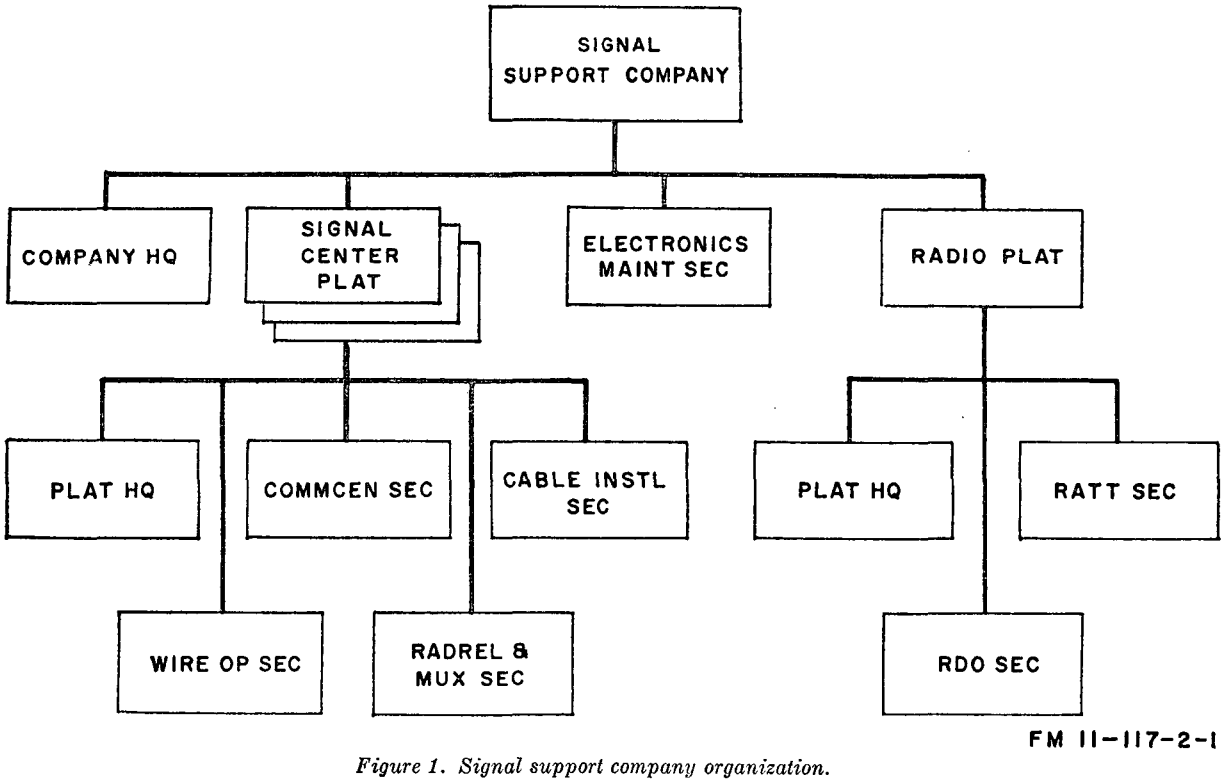

Figure 1. Signal support company organization.

Page 7. Figure 2 is superseded as follows:

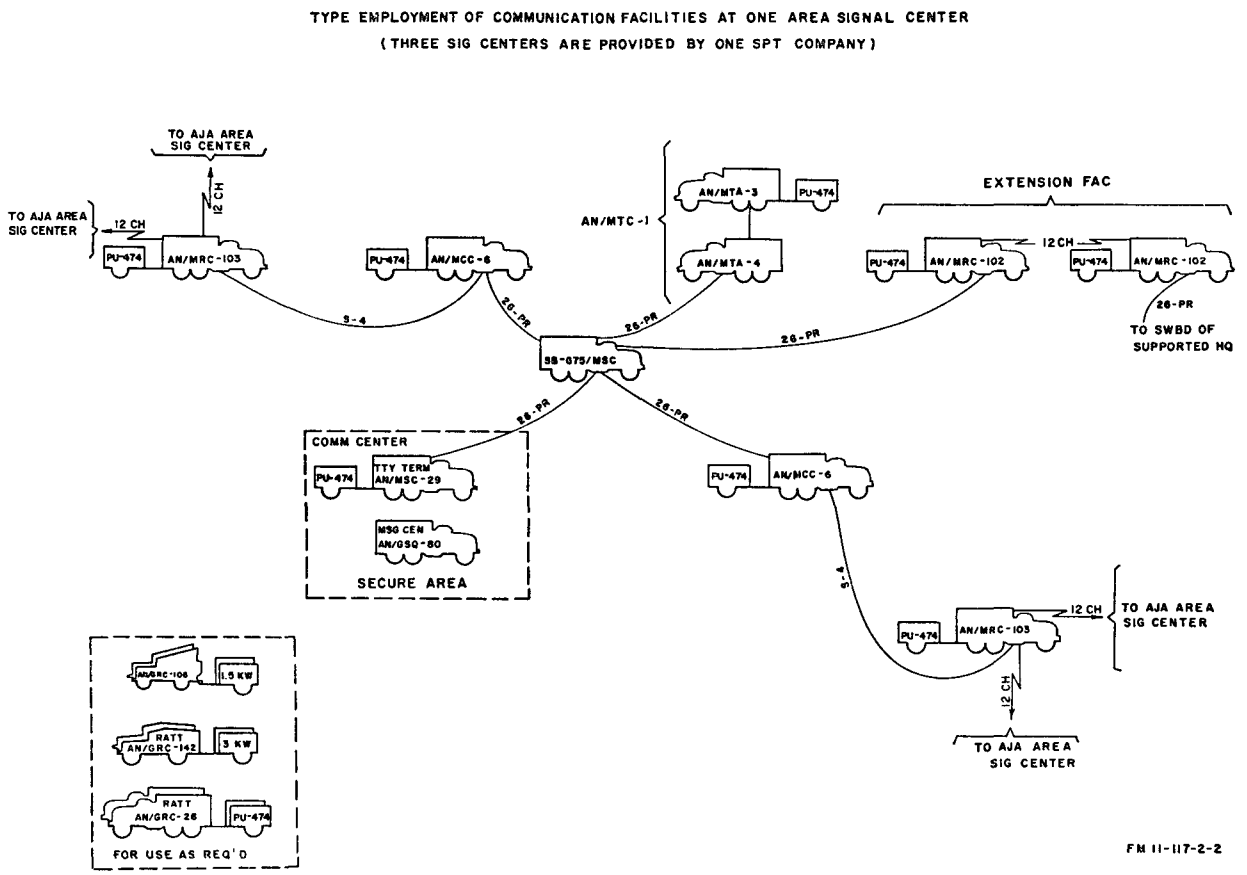

Figure 2. Typical facilities at one area signal center established by signal support company.

Page 8, paragraph 12*b*(2). In line 2, "circuit control specialists" is change to read "tactical circuit controllers."

Page 8, paragraph 12*b*(3). In lines 2 through 4, "two senior telephone switchboard operators and six telephone switchboard operators" is changed to read "three senior telephone switchboard operators and nine telephone switchboard operators."

Page 8, paragraph 12*b*(5). In line 1, "two telephone installer-repairmen" is changed to read "two wiremen."

Page 8, paragraph 12. Subparagraphs *c* and *d* are superseded as follows:

c. Communications Center Sections. Each of the three communications center sections provides a communications center on a 2-shift, 24-hour basis. Each section is authorized personnel as follows:

(1) A section chief (message center officer), a cryptographic technician (warrant officer), and a communications center supervisor (NCO) provide supervision of section operations.

(2) Two shift supervisors, one communications center specialist and three communications clerks, two cryptographers, and six teletypewriter operators form two teams to operate the communications center in two shifts.

(3) Two messengers and two assistant messengers form two motor messenger teams to operate in two shifts.

d. Radio Relay and Multiplexer Sections. Each of the three radio relay and multiplexer sections has a section headquarters, four radio relay teams, and two multiplexer teams. Each section operates on a 24-hour basis and is authorized personnel as follows:

(1) *Section headquarters.* A radio relay and multiplexer section headquarters has a section chief to supervise all operations of the section. This headquarters also has a general purpose power generator operator/mechanic and a power generator equipment apprentice to install, operate, and maintain the power generators used by the teams of the section.

(2) *Radio relay teams.* Each of the four radio relay teams has a team chief and two other radio relay attendants for 24-hour operation of one multichannel radio equipment. Two of these teams operate multichannel radio terminal sets. The other two teams operate multichannel radio repeater sets, in conjunction with the multiplexer teams ((3) below and para 26*b*), as the radio portions of two terminals.

(3) *Multiplexer teams.* Each of the two multiplexer teams has a team chief and two multiplexer equipment attendants for 24-hour operation of one telegraph-telephone terminal AN/MCC–6. Each of these is used in conjunction with one of the two radio relay team repeater sets ((2) above), as the multiplexer portion of one terminal.

Page 9, paragraph 13*a*. In line 2, "third echelon" is changed to read "direct support level."

Page 9. Paragraph 13*b* is superseded as follows:

b. A section chief (communications-electronics technician) is assigned to the section to supervise section maintenance activities. A radio repairman supervisor and three field radio repairmen, two radio relay repairmen, two general crypto repairmen, and three teletypewriter equipment repairmen also are included in the section to perform maintenance on organic electronics equipment. Two general purpose power generator operator/mechanics and one power generator equipment apprentice perform maintenance on organic power generators. Direct support maintenance on organic facsimile equipment is furnished by the nearest unit providing maintenance support to the company. One repair parts specialist is assigned to control and issue spare parts and end items of electronics equipment.

Page 9, paragraph 14*a*. In lines 6 and 7, "Two powermen and one powerman helper" is changed to read "Two general purpose power generator operator/mechanics and one power generator equipment apprentice."

Page 9, paragraph 14. Subparagraphs *b* and *c* are superseded as follows:

b. Radio Section. The radio section has a section chief (chief radio operator) and six radio operating teams. Each team has a senior radio operator, who is the team chief, and a radio operator. Each team is authorized an SSB radio set AN/GRC–106, mounted in a ¼-ton truck, to provide a mobile, AM voice and CW radio station.

c. Radio Teletypewriter Section. The radio teletypewriter (RATT) section has a section chief and 12 RATT teams, each of which provides a mobile RATT, voice, and CW station. Six of these teams are four-man teams, and six are three-man teams. Each four-man team has a RATT team chief and three RATT operators for 24-hour operation of a RATT set AN/GRC–26, mounted in a 2½-ton truck with trailer. Each three-man team has a RATT team chief and two RATT operators for 24-hour operation of a RATT set AN/GRC–142, mounted in a ¾-ton truck with trailer.

Page 10. Paragraph 18*b* is superseded as follows:

b. The signal support company commander may act as signal advisor, on the staff of the headquarters his company supports (para 7), as well as commander of his own company. He maintains continuous liaison for coordination of his communications operations with the operations of the supported headquarters. This affords efficiency in the control and conduct of the company's communications operations and ensures that these respond effectively to the communications requirements of the supported headquarters.

Page 11. Section II is superseded as follows:

Section II. FACILITIES

20. Multichannel Facilities

Normally, any of the signal center platoons of the signal support company is employed individually to provide augmentation facilities for an area communications system that is established by another signal organization for a headquarters. Figure 2 indicates a typical configuration of the multichannel communications facilities a platoon can provide under such circumstances. When the company provides the entire communications system for supported headquarters, the configuration of the multichannel facilities provided by the three signal center platoons may be as typically illustrated in figure 3. In this situation, the company commander and his technical control officer determine the composition of the multichannel system. Their determination is based on the specific communications requirements established by the SOP of the supported headquarters, generated by the tactical situation, and limited or otherwise affected by the availability of communications facilities (including items such as radio frequencies).

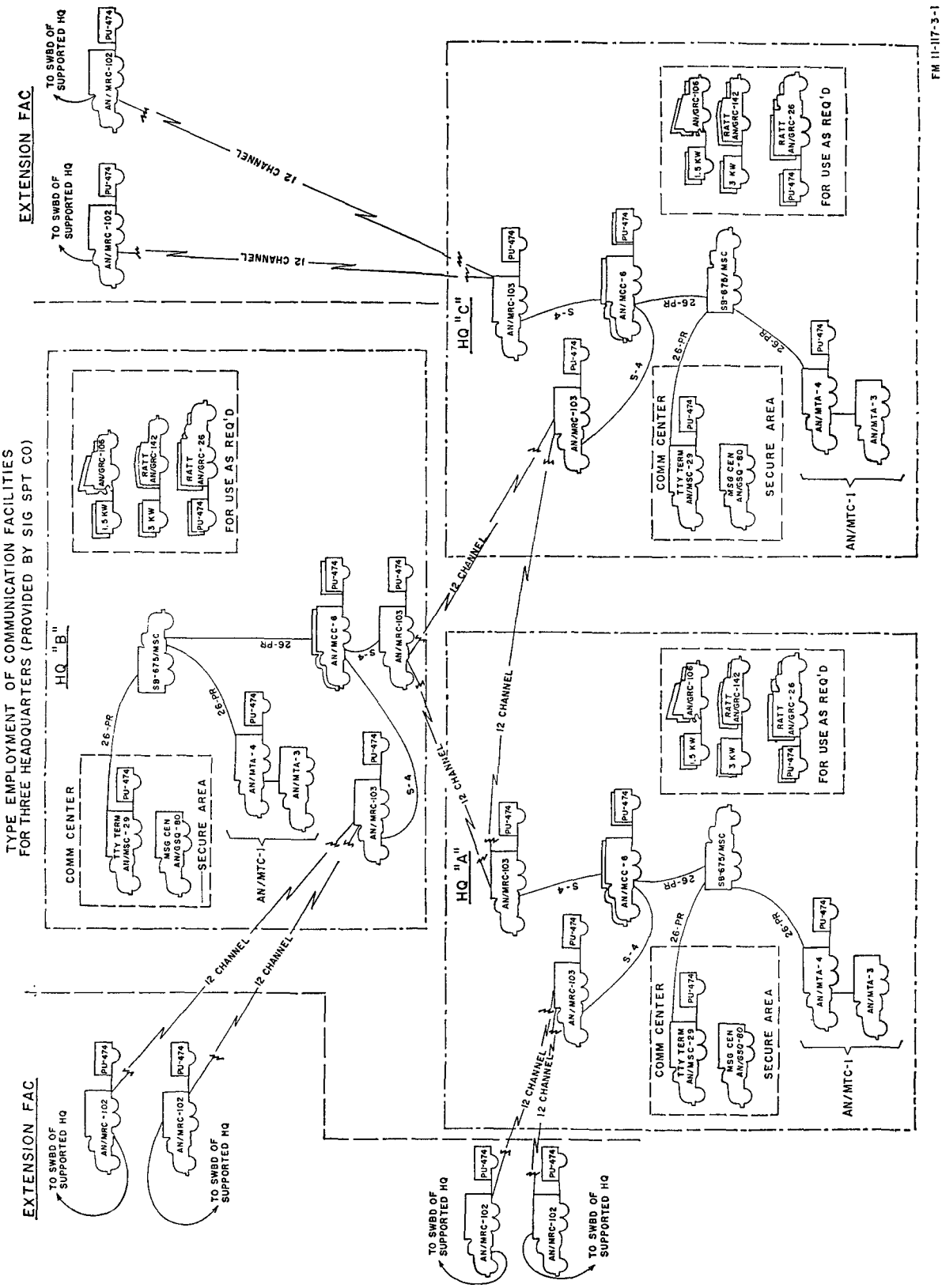

Figure 3. Typical communications system established solely by a signal support company.

21. Multichannel Radio

a. Principal Facility. The principal facility used by the signal support company to provide supported headquarters with common-user and sole-user telephone and teletypewriter circuits is multichannel radio. Equipments provided for this purpose by radio relay and multiplexer sections are as shown in figures 2 and 3. Cable installation sections assist in establishing these circuits by installing and maintaining the interconnecting cable facilities indicated in these figures.

b. Extension Facilities. Each signal center platoon has extension facilities to interconnect the signal center it establishes and other headquarters (fig. 2 and 3). These facilities are provided with multichannel radio terminals, from which circuits are established to the communications facilities of the headquarters served by the extension facilities.

22. Single Channel Radio

Each radio platoon has a variety of mobile radio facilities (fig 2 and 3). Two types of these are radioteletypewriter sets. One of these types is mounted in a 2½-ton truck; the other, in a ¾-ton truck. The third type of set is an SSB radiotelephone set, also capable of CW, mounted in a ¼-ton truck.

Page 11. Paragraph 23 is superseded as follows:

23. Technical Control

One Operations Central AN/MSC–32 is required by the technical control officer to plan, engineer, and control an area-type communications system. The central is mounted on a 2½-ton truck and powered by a trailer-mounted Generator Set PU–618/M. The central also houses the radio used as NCS in the company FM net.

Page 12, paragraph 25*b*. In line 4, "This equipment is" is changed to read "These circuits are."

Page 12, paragraph 26. In paragraph title, "Carrier" is changed to read "Multiplexer."

Page 12, paragraph 28*b*. In line 1, "Radio Sets AN/GRC–46" is changed to read "radio teletypewriter sets AN/GRC–142."

Page 12. Paragraph 29 is superseded as follows:

29. Company Wire Communications

The signal support company headquarters is authorized a local-battery telephone switchboard. This board provides the internal telephone service for the company, and normally terminates two trunks from the switchboard that serves the headquarters of one of the organizations supported by the company (fig. 4). In addition to performing his principal duty, the company equipment reports clerk operates the company switchboard.

Page 14, paragraph 30*b*(4). In lines 6, 7, and 8, "radio relay equipment such as the AN/MRC–73 and AN/MRC–54" is changed to read "multichannel radio equipment, for communications between equipments."

Page 14. Section V is added after paragraph 30 as follows:

Section V. STABILITY OPERATION

30.1. Communications Facilities for Stability Operations

The signal support company may be employed in support of organizations engaged in stability operations. In such instances, the company provides the same types of facilities described in this chapter for other operations (para 15 through 28). Dispersion of supported headquarters in a generally hostile environment during these operations may generate additional problems concerning physical security.

30.2. Security

When the operating platoons are dispersed to be employed individually, they cannot adequately provide their own physical security. Security of a signal center platoon should be provided by a supported headquarters. This requirement limits the company's ability to establish area signal centers, except when the signal center platoon is collocated with a unit that can assist in defense of the installation site.

30.3. Messenger Security

During stability operations, motor messenger teams are particularly vulnerable to ambush, mines, roadblocks, and snipers. For this reason, they should be employed only in well-secured areas. These hazards can be minimized by the use of army aircraft to carry the bulk of message traffic that otherwise would go by motor messenger. As much as possible, aircraft used extensively for transpor-

tation, resupply, and medical evacuation should be used during these same flights to carry messages. For details concerning precautions and procedures to be used when motor messengers must be used in areas where insurgent action is prevalent, see paragraph 7–21, FM 24–1.

Page 18. Paragraphs 41 through 44 are added after paragraph 40 as follows:

41. Combat Service Support

a. Field Army Support Command. The field army support command (FASCOM) provides combat service support, except personnel replacements, for the field army. Primarily, two kinds of major subordinate elements of the FASCOM provide such support. These are the army-wide service organizations and the support brigades.

b. FASCOM Army-Wide Service Organizations. The FASCOM army-wide service organizations perform their functions throughout the field army. These are the medical brigade, military police brigade, transportation brigade, and (when not attached directly to field army headquarters) civil affairs brigade. Engineer construction units may be attached when required. Engineer and signal brigades provide army-wide services. They are not FASCOM units and are normally assigned directly to field army headquarters. They do not provide supply and maintenance services.

c. FASCOM Support Brigades. Each FAS COM support brigade provides supply, maintenance, and certain other services in a designated area. In a two-corps field army, a corps support brigade in each corps area furnishes divisional and nondivisional units with combat service support, such as personnel and administration, maintenance, transportation and movements, military police, and supply and services support. The army support brigade performs its functions in the army service area. This brigade differs from the corps support brigade in the kinds of support it provides. The army support brigade, for example, has no military police, transportation, or movement control units. These units are provided by FASCOM. The army support brigade does not provide ammunition service. This service is provided by the corps support brigade for a corps slice of the field army. The army support brigade has aircraft maintenance battalions, which normally are not attached to a corps support brigade.

d. Combat Service Support for the Operating Platoons. When the operating platoons of the signal support company are dispersed, and a platoon is attached to a headquarters or unit it supports, the company commander determines how this platoon is to obtain combat service support. The company commander prepares plans and coordinates them with the FASCOM support brigade. These plans and coordination ensure that the company elements, wherever located, can obtain combat service support from the nearest element of the FASCOM support brigade. A platoon leader, upon arriving at the site where his platoon is to operate, establishes liaison with the FASCOM support brigade element that has been designated to support the platoon. This permits establishment of detailed procedures for provision of necessary support. The company commander also makes special arrangements to get combat service support for platoons of the company that are employed in support of a single headquarters or employed on an area basis in support of many smaller units. Such arrangements may provide for a platoon to place requirements on local combat service support elements through the headquarters at which this platoon is located. Under such circumstances, the platoon leader establishes liaison through this headquarters for detailed combat service support procedures.

42. Unit Chemical, Biological, and Radiological Defense

a. Defensive Measures. The purpose of unit chemical, biological, and radiological (CBR) defensive measures (FM 21–40) is to permit the unit to continue its mission during and after a CBR attack. To accomplish their purpose, therefore, such measures must assure effective operations in a CBR environment. These defensive measures include:

(1) Using chemical agent detectors and alarm systems.
(2) Wearing protective clothing.
(3) Employing protective equipment.
(4) Using protective shelters.
(5) Dispersing personnel and equipment.
(6) Decontaminating equipment and personnel.
(7) Administering first aid.

b. Responsibilities. Every member of the unit has some responsibility in unit CBR defense. Attaining and maintaining individual and unit proficiency in CBR protective measures within the established standards is a command responsibility.

Without degrading this responsibility, individual members of the unit are responsible for certain general functions connected with CBR defensive operations. Duties related to these functions are:

(1) *Individual soldier.* The individual soldier learns the unit and individual CBR protection procedures, so that he can carry out his mission with the least risk of injury.

(2) *Unit commissioned and noncommissioned officers.* Unit officers and noncommissioned officers teach individual protection procedures to all men, establish unit collective and tactical CBR defensive measures and procedures, and use organizational first-aid and detection equipment.

(3) *Chemical representative.* The company commander designates a member of his headquarters as CBR representative, to assist him in planning and coordinating CBR defensive operations. The company is not authorized a chemical staff specialist for this purpose. Therefore the individual so designated is given special CBR training to qualify him for performing these duties in addition to his regular duties.

c. CBR Training. The company engages in CBR training to prepare for operation with maximum individual and unit effectiveness under conditions produced by either friendly or enemy employment of CBR weapons. Readiness for operation in a CBR environment is a command responsibility. The company commander holds every officer and noncommissioned officer responsible for knowing and being able to apply the principles, tactics, and techniques of CBR defense commensurate with the level of his authority. All other members of the company train in how to take established CBR defensive measures and what practical steps to take in the absence of specific instructions. When the platoons of this company are dispersed and attached to the headquarters or units they support, they participate in CBR training with the supported headquarters or units.

43. Tactical Airlift Operations

Tactical airlift forces of the Air Force increase the battlefield mobility of the Army in land combat operations. The Air Force provides the supported headquarters with the capability to airland or airdrop signal elements and to furnish these elements the sustained logistical support required. When the company commander determines that he has a tactical airlift requirement, he submits his request in accordance with the plans of the supported headquarters for the tactical airlift operation. Complete details of joint Army-Air Force doctrine for tactical airlift operations are in AFM 2–50/FM 100–27.

44. Defense Against Air Attack

The signal support company has six caliber .50 machine guns, which provide a limited self-defense capability against hostile low-flying aircraft. Two of these guns are authorized in each of the three signal center platoon headquarters. Therefore they are employed as part of the signal center local defense, with a dual mission of ground and air defense. No more than two of these machine guns are likely to be located at any one signal center. Passive air defense measures, such as dispersion, cover and concealment, camouflage, and warning systems, constitute the primary internal actions taken by the company to avoid or reduce the effect of enemy air attack. Nevertheless, the company can employ its individual weapons, as well as its machine guns, against air attack. Company SOP establish criteria and detailed procedures for taking and for withholding active measures. These procedures provide that any action taken must permit continuance of signal mission operations. They also provide for the safety of friendly aircraft and troops. Further, they provide that such action must be taken or withheld in accordance with procedures established by the commanders at whose headquarters the company installations are located. Normally, elements of the company are restricted from firing on aircraft when not under direct attack. When under direct attack, or under specified unusual circumstances when so directed by the responsible commander, members of the company may engage positively-identified low-flying enemy aircraft by delivering all available small-arms fire on the attacking aircraft. The principle involved is that large volumes of fire from nonair defense weapons can destroy both high speed and low speed aircraft or disrupt their attack. Against fast aircraft, an element may use the technique called a *pattern of fire*, in which every man places his fire into the flightpath, making no attempt to track the aircraft. This forces the aircraft to fly through the *pattern* or abandon the attack. Against slow aircraft, individuals make their small-arms fire effective by placing well-aimed shots on the aircraft, using the maximum rate of fire of their weapons. Aircraft recognition

and rules for engagement, as well as firing techniques, determination of when an air attack is in progress, and safety measures for protection of friendly aircraft and troops, are subjects for emphasis in unit and individual training. Gunnery, maintenance, weapon operating procedure (FM 23–65), and tracer observation techniques for aerial gunnery (FM 44–2) are added subjects for machine gunners.

Page 19. Appendix I is superseded as follows:

APPENDIX I

REFERENCES

1. General

This appendix contains a selected list of publications pertinent to the operations of the signal support company. For availability of items listed and other publications on additional subjects, refer to Department of the Army Pamphlets 310–1, 310–3, and 310–4. (Equipment publications (TM's) are listed under Nomenclature in appendix II.)

2. Army Regulations (AR)

AR 320–5 Dictionary of United States Army Terms.
AR 320–50 Authorized Abbreviations and Brevity Codes.
AR 350–1 Army Training.
AR 380–5 Safeguarding Defense Information.
AR 380–40 Safeguarding Crypto-Information.
AR 380–41 Control of Cryptomaterial.
AR 711–16 DSU/Installation Stock Control and Supply Procedures (Army Field Stock Control System).
AR 735–35 Supply Procedures for TOE Units and TDA Units or Activities.
AR 750–5 Organizations, Policies, and Responsibilities for Maintenance Operations.
AR 750–8 Command Maintenance Management Inspections (CMMI).
AR 750–18 Communications Security Equipment Maintenance.

3. Army Training Programs (ATP) and Army Training Tests (ATT)

ATP 11–116 Headquarters and Headquarters Detachment, Signal Battalion and Signal Support Company.
ATT 11–116 Headquarters and Headquarters Detachment, Signal Battalion and Signal Support Company.

4. Department of the Army Pamphlets (DA Pam)

DA Pam 108–1 Index of Army Films, Transparencies, GTA Charts, and Recordings.
DA Pam 310–1 Index of Administrative Publications (Army Regulations, Special Regulations, Circulars, Pamphlets, Department of the Army Posters, Joint Chiefs of Staff Publications, and General Orders).
DA Pam 310–3 Index of Doctrinal Training and Organizational Publications (Field Manuals, Reserve Officers' Training Corps Manuals, Training Circulars, Army Training Programs, Army Subject Schedules, Army Training Tests, Firing Tables and Trajectory Charts, Tables of Organization and Equipment, Type Tables of Distribution, and Tables of Allowances).
DA Pam 310–4 Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.

5. Field Manuals (FM)

FM 3–12 Operational Aspects of Radiological Defense.

FM 9–30	Maintenance Battalion, Division Support Command.
FM 10–50	Supply and Transport Battalion, Division Support Command.
FM 11–21	Tactical Signal Communications System, Army, Corps, and Division.
FM 11–23	U.S. Army Strategic Communications Command (Theater).
FM 11–50	Signal Battalion, Armored, Infantry, and Infantry (Mechanized) Divisions.
FM 11–57	Signal Battalion, Airborne Division.
FM 11–75	Army Command Signal Radio and Cable Battalion.
FM 11–84	Signal Radio Operations Company.
FM 11–86	Combat Area Signal Battalion, Army.
FM 11–92	Corps Signal Battalion and Airborne Corps Signal Battalion.
FM 11–95	Army Signal Battalion.
FM 11–117	Signal Support Company.
FM 11–127	Signal Medium Headquarters Operations Company.
FM 11–137	Signal Communications Center Operation Company.
FM 11–147	Signal Small Headquarters Operations Company.
FM 11–157	Signal Large Headquarters Operations Company.
FM 21–5	Military Training Management.
FM 21–6	Techniques of Military Instruction.
FM 21–30	Military Symbols.
FM 21–40	Chemical, Biological, Radiological, and Nuclear Defense.
FM 21–41	Soldier's Handbook for Chemical and Biological Operations and Nuclear Warfare.
FM 21–48	Chemical, Biological, and Radiological (CBR) and Nuclear Defense Training Exercises.
FM 21–60	Visual Signals.
FM 23–65	Browning Machinegun, Caliber .50 HB, M2.
FM 24–1	Tactical Communications Doctrine.
FM 24–2	Radio Frequency Management.
FM 24–16	Signal Orders, Records, and Reports.
FM 24–17	Tactical Communications Center Operations.
FM 24–18	Field Radio Techniques.
FM 24–19	Communications-Electronics Reference Data.
FM 24–20	Field Wire and Field Cable Techniques.
FM 24–21	Field Radio Relay Techniques.
FM 31–25	Desert Operations.
FM 31–30	Jungle Training and Operations.
FM 31–71	Northern Operations.
FM 31–72	Mountain Operations.
(CM) FM 32–5	Communications Security (U).
(C) FM 32–20	Electronic Warfare (Ground Based) (U).
FM 33–5	Psychological Operations—Techniques and Procedures.
FM 44–2	Air Defense Artillery Employment (Automatic Weapons).
FM 61–100	The Division.
(S) FM 100–1	Doctrinal Guidance (U).
FM 100–5	Field Service Regulations; Operations.
FM 100–10	Field Service Regulations; Administration.
FM 100–15	Field Service Regulations; Larger Units.
FM 100–27	U.S. Army/U.S. Air Force Doctrine for Tactical Airlift Operations.
FM 101–5	Staff Officers' Field Manual; Staff Organization and Procedure.
FM 101–10–1	Staff Officers' Field Manual; Organization, Technical, and Logistical Data; Unclassified Data.
FM 101–10–2	Staff Officers' Field Manual; Organizational, Technical, and Logistical Data;

Extracts of Tables of Organization and Equipment.

Page 21, appendix II.

The following are deleted from the list of items:

Page 21. AN/GRM–55, AN/PRC–25, AN/TSM–16, AN/USM–50, I–181, ME–30/U, PP–1578/PD, PU–290/MR, PU–294/G, RL—159/U, TS–2/TG, TS–352/U, TS–382/U, and TS–383/GG.

Page 22. AN/GRC–46 and AN/GRM–55.

Page 23. AN/PRC–25.

Page 24. AN/TSM–16 and AN/USM–50.

Page 25. I–181.

Page 26. ME–30/U, PU–290/MR, and PU–294/G.

Page 27. TS–2/TG.

Page 28. TS–352/U, TS–382/U, and TS–383/GG.

The following are added to the indicated columns of the list of items in proper order of type numbers:

Page 21. Type No: PU–474/U; *TOE Allocation:* 1 ea Wire Op Sec, 1 ea Comm Cen Sec, 6 ea Radrel-Mux Sec, 6 ea Ratt Sec, 2 ea Elect Maint Sec.

Page 21. Type No: PU–618/M; *TOE Allocation:* 1 ea Co Hq.

Page 22. Nomenclature: Radio Teletypewriter Set AN/GRC–142; *Description:* A mobile radio that provides half-duplex capability for single-sideband voice, CW, and secure RATT communications for forward tactical use. Range is 80 km (ground wave); *Remarks:* Installed in Shelter S–153. Can be mounted on ¾-ton truck. Frequency is 2.000 to 29.999 mcs in locked/kc steps.

Page 22. Nomenclature: Radio Terminal Set AN/MRC–102, TM 11–5895–357; *Description:* An air or vehicular transportable radio-carrier assemblage used to provide radio relay, carrier telephone, and carrier telegraph facilities. Range is 48 km (line-of-sight); *Remarks:* Installed in Shelter S–306/MRC–102. Can be mounted on 2½-ton truck. Power supplied by Generator Set PU–474, mounted in 1½-ton trailer. When no interference with local commercial communications will result, the radio terminal set AN/MRC–73 will be issued in lieu of this set.

Page 23. Nomenclature: Radio Repeater Set AN/MRC–103, TM 11–5820–533; *Description:* An air or vehicular transportable radio-relay repeater set used between radio terminals such as Radio Terminal Set AN/MRC–102. May be used in conjunction with Telegraph-Telephone Terminal AN/MCC–6 as a radio terminal. Range is 48 km (line-of-sight). *Remarks:* Installed in Shelter S–307/MRC–103. Can be mounted on 2½-ton truck. Power supplied by Generator Set PU–474, mounted in 1½-ton trailer. When no interference with local commercial communications will result, the radio repeater set AN/MRC–54 will be issued in lieu of this set.

Page 26. Nomenclature: Generator Set PU–474/U, TM 11–6115–230; *Description:* Two 10-kw gasoline-engine-driven electric-generating units, mounted in a 1½-ton trailer, plus ancillary equipment. Supplies 10 kw at 115 volts ac, 50–60 cycles; *Remarks:* Only one generating unit used at a time. The other is on standby.

Page 26. Nomenclature: Generator Set PU–618/M; *Description:* Two 5-kw gasoline-engine-driven electric-generating units, mounted in a 1½-ton trailer, plus ancillary equipment. Supplies 5 kw, 1–3 phase, at 120, 240, 120/208 volts ac, 60 cycles; *Remarks:* Only one generating unit used at a time. The other is on standby.

The following changes are made in the columns and items indicated:

Page 21. Type No. column: "AN/GRC–46" is changed to read "AN/GRC–142"; "AN/MRC–54" is changed to read "AN/MRC–102 or AN/MRC–73"; "AN/MRC–73" is changed to read "AN/MRC–103 or AN/MRC–54"; and "AN/URM–100" is changed to read "AN/URM–103."

Page 21. TOE Allocation column: For CX–4566/G, "10 ea Cable Instl Sec" is changed to read "20 ea Cable Instl Sec"; for TA–312/PT, "4 ea Cable Instl Sec" is added; and for TS–140/PCM, "1 ea Wire Ops Sec" is deleted.

Page 28. Nomenclature column: "Wire WD–1/TT" is changed to read "Cable, Telephone WD–1/TT."

Page 28. Appendix III is added after appendix II as follows:

APPENDIX III
TOE VARIATION

1. Organization

When medium capacity radio relay assemblages are available for issue, the signal support company may be organized under its TOE variation, SRC–10 (para 2.1). The major organizational elements of the company remain the same as under TOE variation, SRC–20. However, the requirement for fewer multiplexers, generators, and vehicles under

SRC–10 reduces the requirements for personnel associated with these equipments. Personnel reductions under this variation are as follows:

a. Multiplexer Personnel. Multiplexer personnel authorizations for the three signal center platoons are reduced by six men. Each radio relay and multiplexer section needs one less multiplexer team and, therefore, is reduced by one multiplexer team chief and one senior multiplexer equipment attendant.

b. Power Generating Equipment Personnel. Power generating equipment personnel authorization for the company is reduced by two men. The radio platoon headquarters is authorized one less general purpose power generator operator/mechanic. The electronics maintenance section is authorized one less power generating equipment apprentice.

c. Vehicle Repair Personnel. Vehicle repair personnel authorization for the company is reduced by one man. The company headquarters is authorized one less wheeled vehicle repair apprentice.

2. Equipment

Under the TOE variation, SRC–10, medium capacity radio relay assemblages are authorized on the same basis as currently available radio relay assemblages are authorized under SRC–20. Fewer multiplexers are required, and different power generating equipments are used. The substitutions are generally as follows:

a. Radio Repeater. One radio repeater set AN/TRC–110 and one associated generator set PU–618/M are substituted for each radio repeater set AN/MRC–103 and associated generator set PU–474/U.

b. Radio Terminal. One radio terminal set AN/TRC–117 and one associated generator set PU–618/M are substituted for each radio terminal set AN/MRC–102 and associated generator set PU–474/U. Note that the radio terminal set AN/TRC–117 does not have a telegraph terminal component, such as the AN/TCC–20 in the radio terminal set AN/MRC–102. For this reason, the AN/TRC–117 can accommodate only one teletypewriter circuit on each voice channel, unless a teletypewriter multiplexing facility is provided from outside sources. TOE variation SRC–10 does not authorize such a facility.

c. Telephone Terminal. One telephone terminal AN/TCC–61 and one associated generator set PU–629 are substituted for each two telegraph-telephone terminals AN/MCC–6 and two associated generator sets PU–474/U. Note that the telephone terminal AN/TCC–61 does not have telegraph terminal components, such as the AN/TCC–4 in the telegraph-telephone terminal AN/MCC–6. For this reason, the AN/TCC–61 can accommodate only one teletypewriter circuit on each voice channel, unless teletypewriter multiplexing facilities are provided from outside sources. TOE variation SRC–10 does not authorize such facilities.

3. Signal Center Facilities

a. Facilities Furnished. The signal support company furnishes generally the same types of signal center facilities under TOE variation, SRC–10, for supported headquarters as it does under SRC–20. The differences are generally in the types and numbers of multichannel radio equipments authorized the signal center platoons that furnish such facilities. To visualize the configuration of one area signal center established under SRC–10, use figure 2 and make the substitutions indicated in paragraph 2 *a* through *c* above. To visualize a system of three signal centers established by this company under SRC–10, use figure 3 (para 20) and make similar substitutions of equipments.

b. Limitations. The absence of teletypewriter multiplexing facilities in the multichannel equipments authorized by TOE variation, SRC–10, may cause limitations in signal center teletypewriter facilities. Since each voice channel in the multichannel systems can accommodate only one teletypewriter circuit, fewer circuits are likely to be available between signal centers for teletypewriter communications.

Page 31. Figure 3 is rescinded.

By Order of the Secretary of the Army:

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FIELD MANUAL
No. 11-117

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *28 May 1965*

SIGNAL SUPPORT COMPANY

		Paragraph	Page
CHAPTER 1.	GENERAL		
Section I.	Introduction		
	Purpose	1	3
	Scope	2	3
	Comments on publications	3	3
	References	4	3
II.	Company Characteristics		
	Mission	5	3
	Capabilities	6	3
	Assignment	7	4
	Basis of allocation	8	4
	Category and mobility	9	4
CHAPTER 2.	ORGANIZATION		
	General	10	5
	Company headquarters	11	5
	Signal center platoons	12	5
	Electronics maintenance section	13	9
	Radio platoon	14	9
3.	COMMUNICATIONS OPERATIONS		
Section I.	Basic Considerations		
	Area concept and COMMEL support	15	10
	Characteristics of area signal center	16	10
	Composition of area signal center	17	10
	Responsibility	18	10
	Employment	19	10
II.	Facilities Analysis		
	Multichannel network	20	11
	Radio relay	21	11
	Radio	22	11
III.	Utilization of Communications Equipment		
	Facilities control	23	11
	Wire operations section	24	11
	Communications center section	25	12
	Radio relay and carrier section	26	12
	Radio section	27	12
	Radio teletypewriter section	28	12
IV.	Internal Communications		
	Wire communications	29	12
	Company radio nets	30	14
CHAPTER 4.	COMPANY ADMINISTRATIVE OPERATIONS		
	General	31	16
	Company command post	32	16
	Personnel management	33	16

CHAPTER 4. COMPANY ADMINISTRATIVE OPERATIONS—Continued

	Paragraph	Page
Mess management	34	16
Company supply operations	35	16
Equipment maintenance	36	17
Unit training	37	17
Company security	38	17
Motor movement	39	18
Company standing operating procedure	40	18
APPENDIX I. REFERENCES		19
II. CHARACTERISTICS OF SIGNAL EQUIPMENT		21

CHAPTER 1

GENERAL

Section I. INTRODUCTION

1. Purpose

This manual provides doctrinal guidance to personnel responsible for the command, organization, operations, and training of a signal support company.

2. Scope

a. This manual contains information on the organization, administration, and tactical employment of the signal support company as organized under TOE 11–117 ( ) with changes as published. It includes essential guidelines which, coupled with experience, judgment, and foresight, provide the company commander and other key personnel of the company with the basic information needed for the most effective communications to the units supported.

b. The material presented herein is applicable without modification to both nuclear and nonnuclear warfare.

c. Communications-electronics (COMMEL) as used in this manual includes the direction and systematic employment of devices and techniques designed to acquire or transmit information essential to the command control of friendly military forces, and to counteract the effectiveness of similar operations conducted by the enemy.

3. Comments on Publications

Developments in tactical and technological fields, new concepts of operations, and organizational changes in the Army make changes in this manual necessary. Users, therefore, are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Director, Organization and Doctrine Directorate, U. S. Army Combat Developments Command Communications-Electronics Agency, ATTN: Doctrine Division, Fort Monmouth, N. J. 07703.

4. References

a. Publications pertaining to subjects within the scope of this manual are listed in appendix I.

b. A summary of the technical characteristics of the major items of signal equipment authorized in the signal support company is provided as appendix II.

Section II. COMPANY CHARACTERISTICS

5. Mission

The mission of the signal support company is to establish, operate, and maintain signal communications facilities to—

a. Augment the capabilities of the army area communications system as required.

b. Provide communication support for three headquarters in the field army, COMMZ, or an independent task force.

6. Capabilities

a. At full strength this unit—

(1) Installs, operates, and maintains radio relay and carrier equipment to provide multichannel circuits for supported units.

(2) Installs, operates, and maintains telephone and teletypewriter patching and switching facilities.

(3) Installs and maintains internal field cable and local telephone circuits as required.

(4) Provides terminal teletypewriter, message center, facsimile, and cryptographic services.

(5) Provides radio teletypewriter, CW,

and voice radio communications as required.

(6) Furnishes motor messenger service.

(7) Performs organizational maintenance of organic vehicles and weapons.

(8) Performs direct support level maintenance on organic electronic equipment.

b. This unit depends upon other units for medical, dental, and religious services.

c. Individuals of this organization can engage in limited defense of the unit's area or installation(s). However, the Company's primary mission cannot be accomplished when this defense becomes necessary. Adequate personnel and equipment for ground and air defense must be provided by higher headquarters when the need is indicated.

7. Assignment

The signal support company may be assigned to a signal battalion, or may function as a separate unit in support of a headquarters in the field army, COMMZ, an independent corps, or a task force.

8. Basis of Allocation

This unit will normally be allocated on the basis of four per field army or two per independent corps, or as required per theater army area.

9. Category and Mobility

a. This unit is designated a Category II unit. (Reference: Unit Categories, AR 320–5.)

b. TOE vehicular authorizations are sufficient to make the company 90 percent mobile.

CHAPTER 2

ORGANIZATION

10. General

a. The signal support company is organized into a company headquarters, three identical signal center platoons, an electronics maintenance section, and a radio platoon.

b. The signal support company commander operates under the control of the battalion headquarters command or supported headquarters command. However, he receives orders from the supported headquarters staff signal officer concerning operational matters. Based on these orders, the company commander, assisted by the facilities control officer, assigns missions to the three signal center platoons.

c. In the performance of his mission the company commander must maintain close liaison with the unit being supported. For this purpose the company commander may be required to assume the duties of a special staff officer at the supported headquarters.

11. Company Headquarters

a. The company headquarters is the command element of the company and is organized and operated along conventional lines. It consists of the company commander and a facilities control officer, along with administrative, supply, mess, and motor personnel, and facilities by which the company commander exercises command and administrative control over his unit. However, the records specialists will normally function in the unit personnel section of the headquarters of the battalion or higher level organization to which the company is assigned or attached. Organizational maintenance of organic arms and vehicles is provided by the company headquarters.

b. The facilities control officer, who is an area signal center officer, serves as the company commander's principal assistant for communications operations. He plans and supervises the installation and maintenance of communications facilities for the signal center of the supported unit. One Operations Central AN/MSC–32 and two teletypewriter operators are used by the facilities control officer to help perform his operational mission. A type employment of the organic communications equipment to provide communications facilities at the signal center of the supported unit is illustrated in figure 2. This illustration includes communications extension facilities provided for by the support company.

12. Signal Center Platoons

Three signal center platoons provide command and operational control of communication facilities of up to three separately located headquarters or headquarters echelons, or to augment the theater or field army area communications system. Each signal center platoon is organized into a platoon headquarters, a wire operations section, a communications center (COMMCEN) section, a radio relay and carrier section, and a cable installation section. Each platoon provides multichannel telephone and teletypewriter trunk circuits, circuit testing and re-routing facilities, telephone and teletypewriter switching, COMMCEN service, facsimile service, and motor messenger service. Those maintenance personnel required to maintain the three Telephone Central Offices AN/MTC–1, and the internal telephone distribution systems are assigned to the signal center platoons.

a. Signal Center Platoon Headqluarters.

(1) Each of the three signal center platoon headquarters consists of the following personnel:

(*a*) A platoon leader (area signal center officer) for command and operational control of platoon activities whose primary function is to organize, establish, maintain, and locate command or area signal centers.

(*b*) A platoon sergeant (area communications chief) who assists the platoon leader in the supervision of the installation, operation, and maintenance of signal field communications systems.

(*c*) One powerman and one powerman helper for the operation and main-

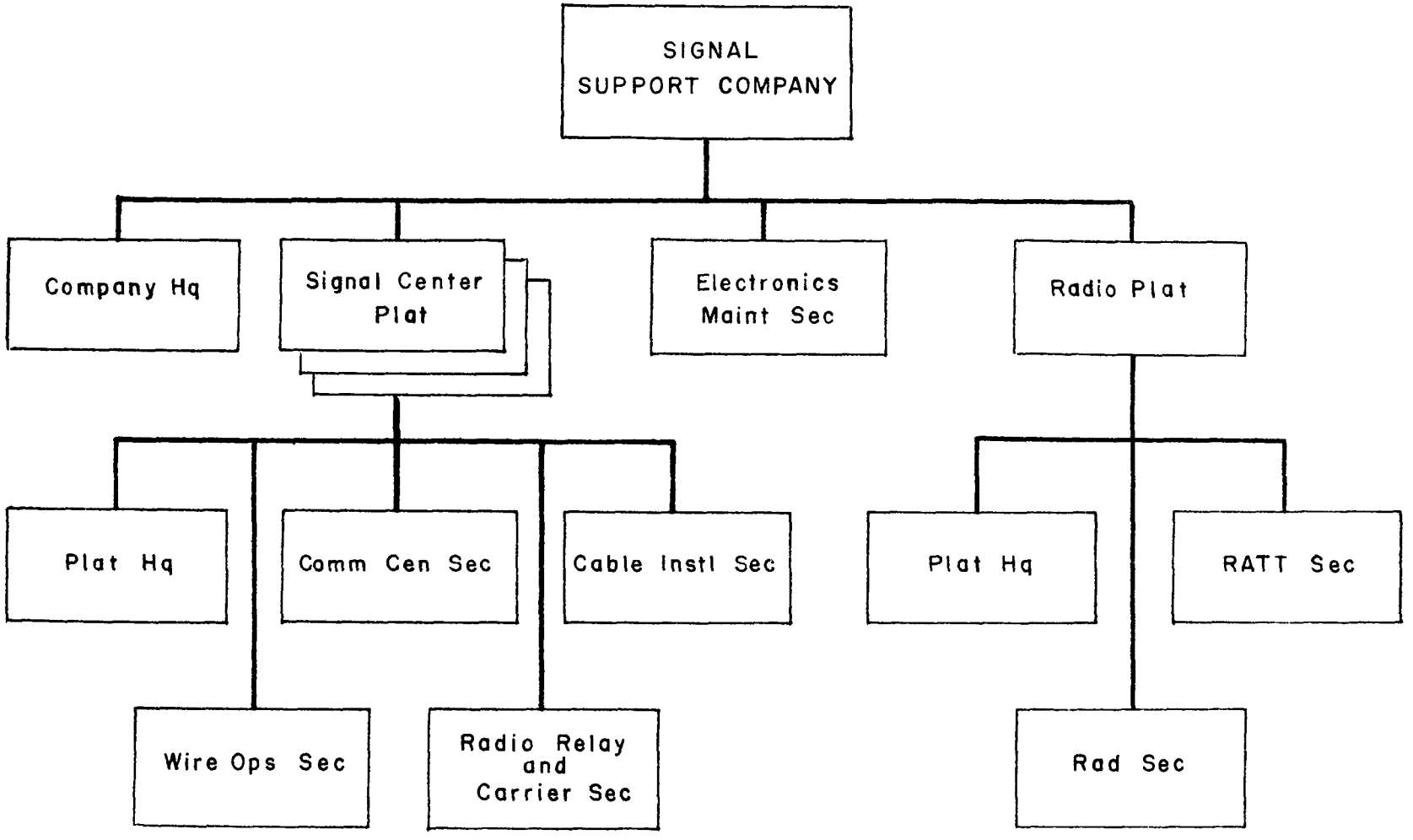

Figure 1. Signal support company.

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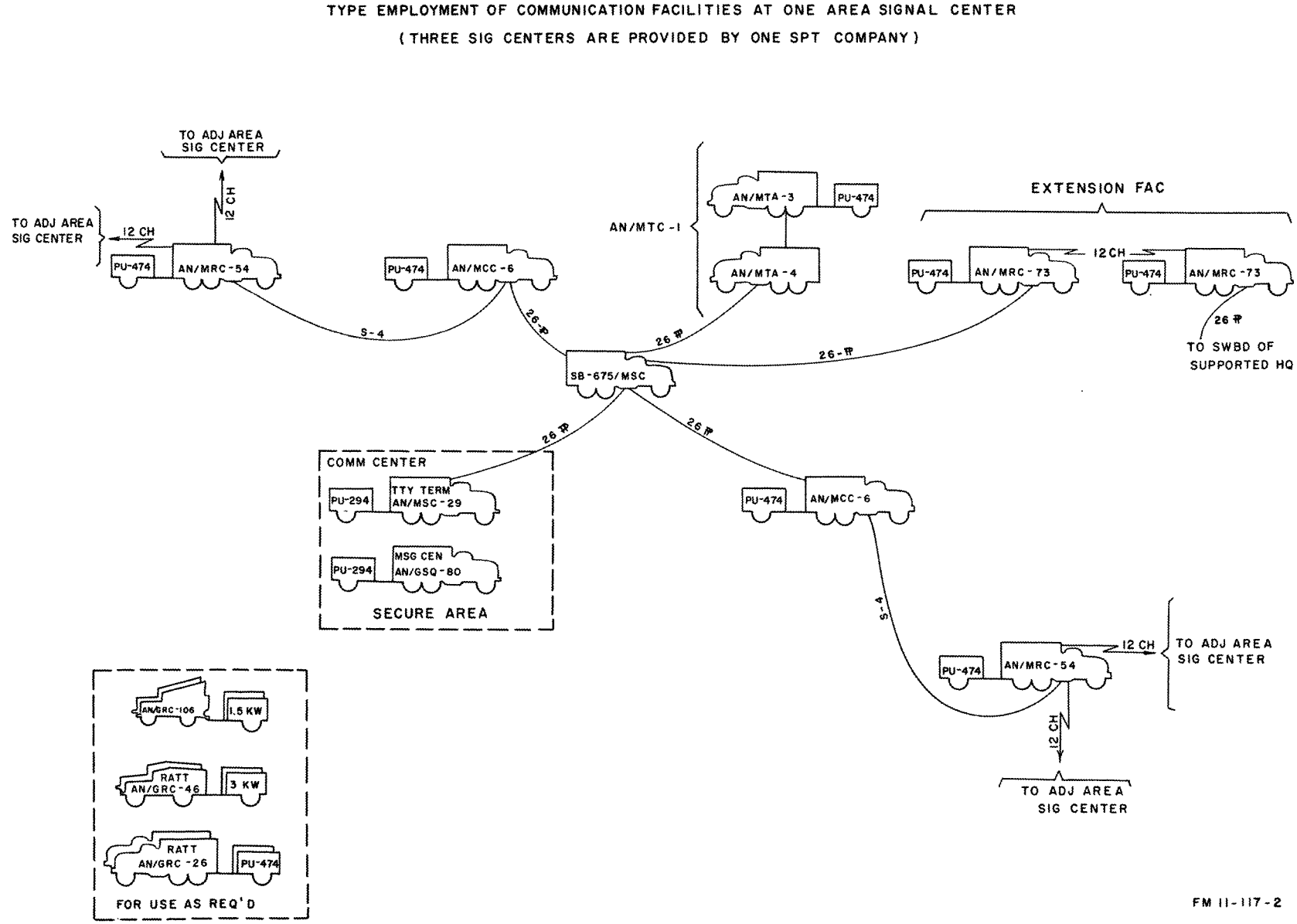

Figure 2. Type employment of communications facilities at one area signal center. (Three signal centers are provided by one support company.)

tenance of power generators organic to the platoon.

(2) This headquarters is responsible for command and operational control of the platoon activities, as directed by the operations section.

b. Wire Operations Section. Each of the three wire operations sections has assigned to it:

(1) A section chief (area communications chief) who supervises the section operations.

(2) A circuit control sergeant and three circuit control specialists who install, operate, and maintain one Communication Patching Panel SB–675/MSC used for patching, testing, and monitoring telephone and teletypewriter circuits.

(3) A telephone switchboard operator supervisor, two senior telephone switchboard operators and six telephone switchboard operators who install and operate the Telephone Switchboard Group AN/MTA–3 (a component of Manual Telephone Central Office AN/MTC–1) which contains a three-position switchboard providing switching facilities for 20 trunks and 200 local circuits and will normally be operated on a 24-hour basis.

(4) Two manual central office repairmen who install and maintain the Telephone Connecting and Switching Group AN/MTA–4 (a component of AN/MTC–1) and to maintain the central office equipment located in the Telephone Switchboard Group AN/MTA–3.

(5) Two telephone-installer repairmen to install and maintain the internal telephone distribution circuits.

c. Communications Center Sections.

(1) Each of the three communications center sections consists of a section chief (warrant officer, cryptographic technician) and a communication supervisor to supervise a 2-shift 24-hour COMMCEN operation provided by the company.

(2) Each of the three COMMCEN sections also has assigned to it two shift operators for overall supervision of each 12-hour shift; one COMMCEN specialist, two cryptographers, and three COMMCEN clerks to provide 24-hour message center service and facsimile operations in the message center (AN/GSQ–80).

(3) A motor messenger and assistant motor messenger are provided for 24-hour motor messenger service.

(4) Six teletype operators to furnish 24-hour operation of telegraph equipment installed in one Telegraph Terminal AN/MSC–29 are also assigned.

d. Radio Relay and Carrier Sections.

(1) Each of the three radio relay and carrier sections has a radio relay section chief for supervision of section operations; four radio relay teams, each team consisting of a radio relay team chief and two radio relay equipment operators to install and operate two Radio Repeater Seats AN/MRC–54 and two Radio Terminal Sets AN/MRC–73 which provide radio relay terminals and extension links for teletypewriter and telephone trunk circuits.

(2) Two carrier equipment teams are also provided, each team consisting of a carrier equipment team chief and two carrier equipment operators to install and operate two Telegraph-Telephone Terminals AN/MCC–6 which provide telegraph and telephone carrier facilities.

e. Cable Installation Sections.

(1) Each of the three cable installation sections consists of:

(*a*) A section chief (wire foreman) for supervision of section operations.

(*b*) Two wire teams.

(2) Each team consists of a wire team chief and three wiremen, to install and maintain field cables (26-pair and spiral–4) interconnecting two Radio Repeater Sets AN/MRC–54, two Radio Terminal Sets AN/MRC–73, two Telegraph Terminals AN/MCC–6, one Telephone Central Office Switchboard AN/MTC–1, and one Communications Patching Panel SB–675/MSC. In addition, the wire teams install and maintain wire locals as required.

(3) Repair and maintenance of field cable installed by the three cable installation sections will be performed by the assigned wiremen, with assistance from the nearest unit providing maintenance support to the company.

13. Electronics Maintenance Section

a. The electronics maintenance section provides third echelon maintenance of organic communications equipment, with the exception of central office repair and telephone repair which are performed directly by the three wire operations sections.

b. A section chief (communications-electronics technician) is assigned to the section to supervise section maintenance activities. A radio repairman supervisor and three field radio repairmen, two carrier equipment repairmen, two general crypto repairmen, and three teletypewriter equipment repairmen are also included in the section to perform maintenance on organic communications equipment. One powerman and one powerman helper perform maintenance on organic power generators. Third echelon maintenance on organic facsimile equipment will be furnished by the nearest unit providing maintenance support to the company. One signal supply parts specialist is assigned to control and issue spare parts and end items of communications equipment.

14. Radio Platoon

The radio platoon is organized into a platoon headquarters, one radio section, and one radio teletypewriter section to provide supervision of radio communication facilities being furnished by the company. This platoon furnishes personnel and equipment to provide internal radio nets (radio teletype, CW, and voice) to headquarters echelons or units being served.

a. Radio Platoon Headquarters. The radio platoon headquarters consists of a platoon leader (radio officer) and a platoon sergeant (chief radio teletypewriter operator) for command and operational control of platoon operations. Two powermen and one powerman helper are included for operation and maintenance of power generators organic to the platoon.

b. Radio Section. The radio section consists of one section chief (chief radio operator) to supervise section operations; six radio operating teams, each team consisting of one intermediate speed radio operator team chief, one intermediate speed radio operator, for operation of SSB Radio Sets AN/GRC–106 which provide mobile AM voice and CW radio communications.

c. Radio Teletypewriter Section.

(1) The radio teletypewriter section consists of a section chief to supervise section operations and 12 radio teletypewriter operating teams. Each team consists of a radio teletypewriter team chief and two radio teletypewriter operators to operate six Radio Teletypewriter Sets AN/GRC–26 and six Radio Teletypewriter Sets AN/GRC–46, which provide mobile radio teletypewriter, AM voice, or CW radio communications.

(2) The radio repairmen are assigned to the electronics maintenance section for more effective control and employment.

CHAPTER 3

COMMUNICATIONS OPERATIONS

Section I. BASIC CONSIDERATIONS

15. Area Concept and COMMEL Support

a. The area concept of tactical offense and defense necessitates great operational flexibility with the capability to meet the extended frontages anticipated on the battlefield. Such a required capability will place great demands on the supported unit's communications requirements and, therefore, on the signal support company.

b. Operational flexibility of the supported unit will require an equally flexible communications system. The supported unit's communications system, therefore, must provide, wherever possible, alternate paths of communication and afford speedy reaction to cope with changes in operational plans and task organizations. To this extent it is the responsibility of the signal support company to provide these facilities and capabilities.

16. Characteristics of the Area Signal Center

The area signal center, as established by the signal support company, provides communications facilities to include the following:

a. Communications service to widely dispersed units.

b. Flexibility to meet changes in task organization and, at the same time, to facilitate the relocation of units, command posts, and installations.

c. Patching facilities to permit electrical rerouting and physical relocation of circuits with a minimum of system changes.

d. Secure facilities for transmitting classified information.

e. Reliable and alternate means of communications.

f. Common-user circuits for installations and units which eliminate the need for extensive organic systems.

g. Sole-user circuits for coordination of high priority requirements.

h. Integration with other communication systems (army, corps, division, special task forces, etc.).

17. Composition of Area Signal Center

The support communications system will normally consist of the following:

a. Signal centers at each echelon of supported headquarters, or at areas designated by the supported headquarters.

b. Multichannel communication links (radio relay and spiral-four cable and carrier) to interconnect adjacent area signal centers.

c. Ground messenger service and air messenger service (aircraft provided by the general support company of the local aviation battalions) to link echelons of supported headquarters with the major subordinate commands.

d. High frequency (HF) radio nets.

18. Responsibility

a. The establishment, operation, and maintenance of communications is a command responsibility. Basically, the signal support company commander is responsible to the supported unit commander for the performance of these functions.

b. The signal support company commander acts in a dual capacity of a staff signal officer on the supported unit staff and as commanding officer of his own unit. In either of these capacities he must effect the continual coordination with the supported unit commander as well as the supported headquarters staff signal officer for greatest efficiency in the conduct and control of signal operations.

19. Employment

Variations in operational environment will preclude rigid rules for the employment of the area communications system. The configuration, extent, and composition of the system will be governed by the following factors:

a. Supported unit mission and task organization for combat.

b. Location and disposition of supported units.

c. Vegetation and terrain characteristics in the area of operations.

d. Enemy capabilities.

Section II. FACILITIES

20. Multichannel Network

The multichannel portion of the area communications system consists of the radio relay, carrier, and cable facilities installed and operated by the signal support company. Figures 4 and 5 illustrate a *type* configuration of these facilities. Final determination as to network composition is made by the signal support company commander, or his facilities control officer whose decisions are based on the desires of the supported unit commander, the SOP, the tactical situation, and the facilities (frequencies, equipment, and personnel) available.

21. Radio Relay

a. *Supported Units.* Radio relay is the primary means of providing common-user and sole-user telephone and teletypewriter circuits for the major headquarters of the supported unit. The type of equipment used in the supported unit multichannel network are Radio Terminal Sets AN/MRC–73 augmented as required by Radio Repeater Set AN/MRC–54, which are installed by the radio relay and carrier sections with coordinated assistance from the cable installation sections of the signal support company.

b. *Extension Facilities.* As shown in figure 3, lateral communications between headquarters "A", "B", and "C" are established with eventual extensions to the switchboards of the supported headquarters by use of 12-channel systems of the Radio Terminal Sets AN/MRC–73.

Figure 3. Type employment of communications facilities for three headquarters as provided by the signal support company.

(Located in back of manual)

22. Radio

Medium and long-range amplitude modulated (AM) radio sets (AN/GRC–46 and AN/GRC–26) and Single Side Band (SSB) radio sets (AN/GRC–106) are used to establish initial communications between area signal centers. As radio relay and wire facilities become available, radio is normally relegated to a backup communications role.

Section III. UTILIZATION OF COMMUNICATIONS EQUIPMENT

23. Facilities Control

One Operations Central AN/MSC–32 is required by the facilities control officer to plan, engineer, and control an area type communications system. The central is mounted on a 2½-ton truck and powered by a trailer-mounted Generator Set PU–294/G. The central also houses the radio used as NCS in the company FM net.

24. Wire Operations Section

a. Manual Telephone Central Office AN/MTC–1 is used to provide the supported headquarters with a telephone central office consisting of a three-position switchboard, a telephone main distribution frame, and ancillary equipment capable of terminating 20 manual or dial trunks and 200 local or common battery subscriber circuits. This configuration is designed for use at corps command or task force signal centers and at army area signal centers.

b. One Patching Panel SB–675/MSC is used to provide this unit with a circuit control and test facility for an area communications center to support the unit's mission requirements. This equipment contains facilities for monitoring and testing telephone and teletypewriter circuits. All circuits provided by mission type equipment (e.g., AN/MCC–6, AN/MTC–1, AN/MRC–73, and local telephones and teletypewriters, etc.) may be normalled through, patched, or terminated in the SB–675/MSC. This mode of operation not only provides centralized control but allows for circuit substitution to insure continuity of communications while localizing and locating line trouble. In

this respect, the SB–675/MSC is also utilized as a wire head.

25. Communications Center Section

a. Message Center AN/GSQ–80 is used to provide the supported headquarters with message handling, off-line encryption and facsimile facilities.

b. A Terminal-Telegraph AN/MSC–29 is used to provide six half-duplex teletypewriter circuits. Security Equipment TSEC/KW–7 is used to secure the circuits. This equipment is connected to the SB–675/MSC Communication Patching Panel.

26. Radio Relay and Carrier Section

a. Radio Terminal Sets AN/MRC–73 are used to provide a high quality, high capacity, multichannel tactical communications system as shown in figure 3. It is used to replace wire where rapid and reliable communications are required.

b. Radio Repeater Sets AN/MRC–54 may be used as repeater stations to extend circuit range. Each repeater may be used in conjunction with an AN/MCC–6 to provide the terminal(s) for a 24-channel system or two 12-channel systems.

c. Two Telephone-Telegraph Terminals AN/MCC–6 are used to provide carrier telephone and telegraph facilities in an area type communications system. Each equipment configuration may be arranged to provide a maximum of 24 telephone circuits and 16 teletypewriter circuits. This arrangement requires the use of separate line facilities for the carrier telegraph rather than one of the carrier telephone channels. Other possible arrangements are 23 telephone circuits and 16 telegraph circuits, 22 telephone circuits and two 8-channel telegraph systems, 20 telephone circuits and four 4-channel telegraph systems, or 21 telephone circuits and one 8-channel system and two 4-channel telegraph systems. The telephone terminal may be used over normal radio-relay circuits, and one carrier telephone terminal may be used over spiral-four facilities. Only one system may be used over spiral-four cable because only one Power Supply PP–825/U is supplied with the shelter. This equipment is required by a signal support company because employment of the equipment configurations is extremely flexible, and is governed only by the requirements of the supported headquarters, the tactical situation, and the ingenuity of the signal officer.

27. Radio Section

a. Radio Sets AN/GRC–106 (SSB) are used to establish voice and CW radio communications nets as required by the supported headquarters.

b. Electrical power is furnished for prolonged periods of operation of the radios by 1.5 KW generators.

28. Radio Teletypewriter Section

a. Radio Teletypewriter Sets AN/GRC–26 are used to provide voice, CW, or secure radio teletypewriter communications using security equipment TSEC/KW–7. Two pieces of this security equipment are used in each radio set to provide full-duplex secure operations. The type(s) of net(s) established depend(s) on the requirements of the supported headquarters. These radio sets may be used for command communications or as area communications systems backup.

b. Six Radio Sets AN/GRC–46 are used to provide voice, CW, or radio teletypewriter communications. One TSEC/KW–7 is issued per set to provide for a half-duplex secure radio teletypewriter circuit. The type(s) of net(s) established depend(s) on the requirements of the supported headquarters. These radio sets may be used for command communications or as area communications systems backup.

Section IV. INTERNAL COMMUNICATIONS

29. Wire Communications

a. A local battery telephone switchboard is provided within the support company headquarters for local telephone service as well as to the headquarters of the supported unit. The type service provided is shown in figure 4.

b. A telephone switchboard operator is assigned to install and operate the field telephone switchboard used in the company headquarters for internal switching facilities and to assist

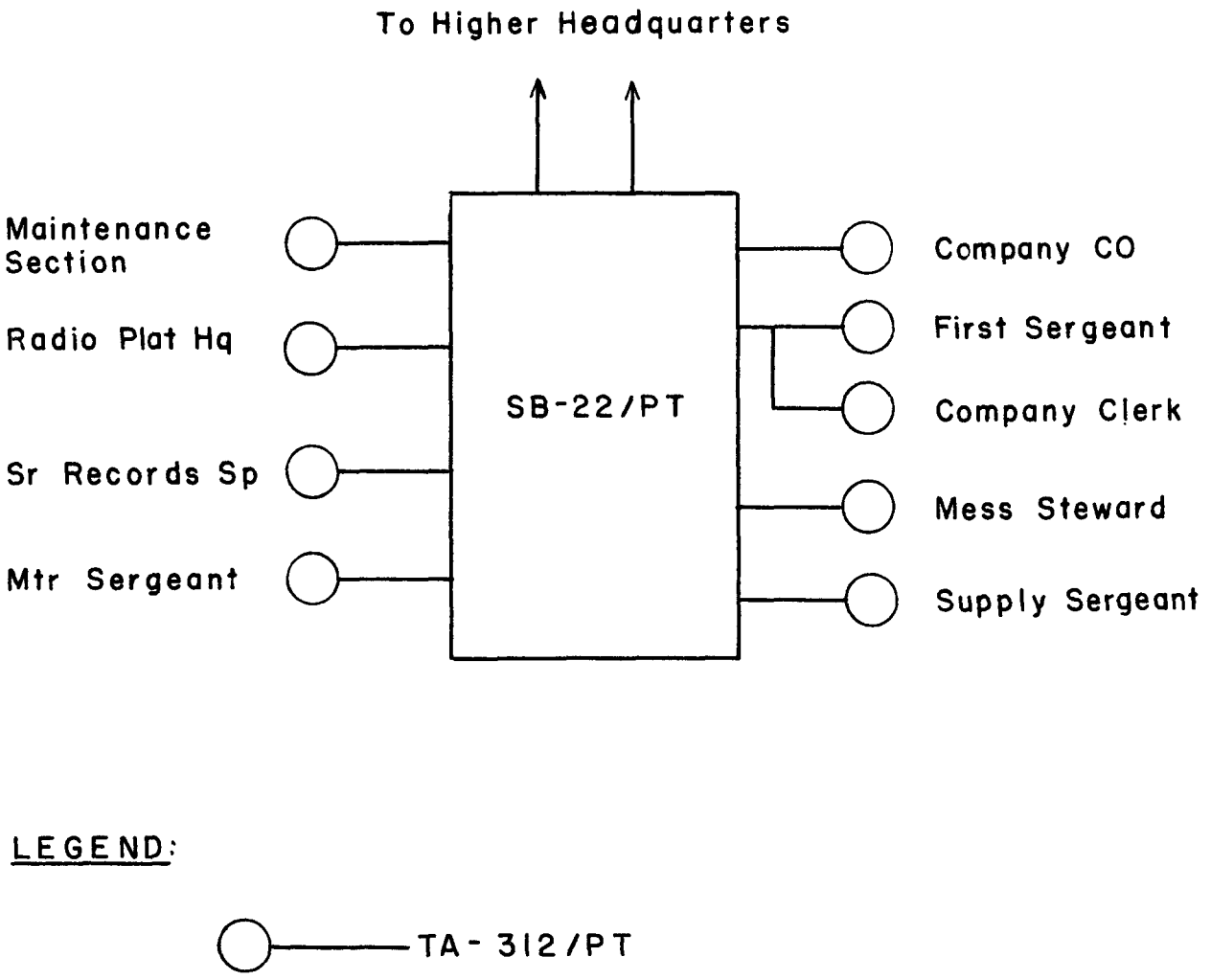

Figure 4. Type wire diagram signal support company.

the other assigned wiremen in installing the company's internal telephone distribution system.

30. Company Radio Nets

a. An FM radio net is utilized in the support company headquarters to provide radio communications between the commander and his staff, in addition to monitoring the net(s) of higher headquarters. A type internal FM radio net is shown in figure 5.

b. The radios of the company FM net are utilized as follows:

(1) The company commander utilizes one Radio Set AN/VRC–47 for command control and coordination of unit operations.

(2) With the use of a Radio Set AN/VRC–47 the facilities control officer can gain access to the unit's command and operations net when his duties require his presence in areas away from the operations central.

(3) One Radio Set AN/VRC–47 is installed in the Operations Central AN/MSC–32 and functions as the net control station in the unit's command and operations net. It is also used to monitor the command and operations net of the unit to which it is assigned when not operating as a separate company.

(4) The platoon leaders of the three signal center platoon headquarters each use one Radio Set AN/VRC–46 to enter the company's command and operations net. It is also used in the initial lineup of radio relay equipment such as the AN/MRC–73 and AN/MRC–54.

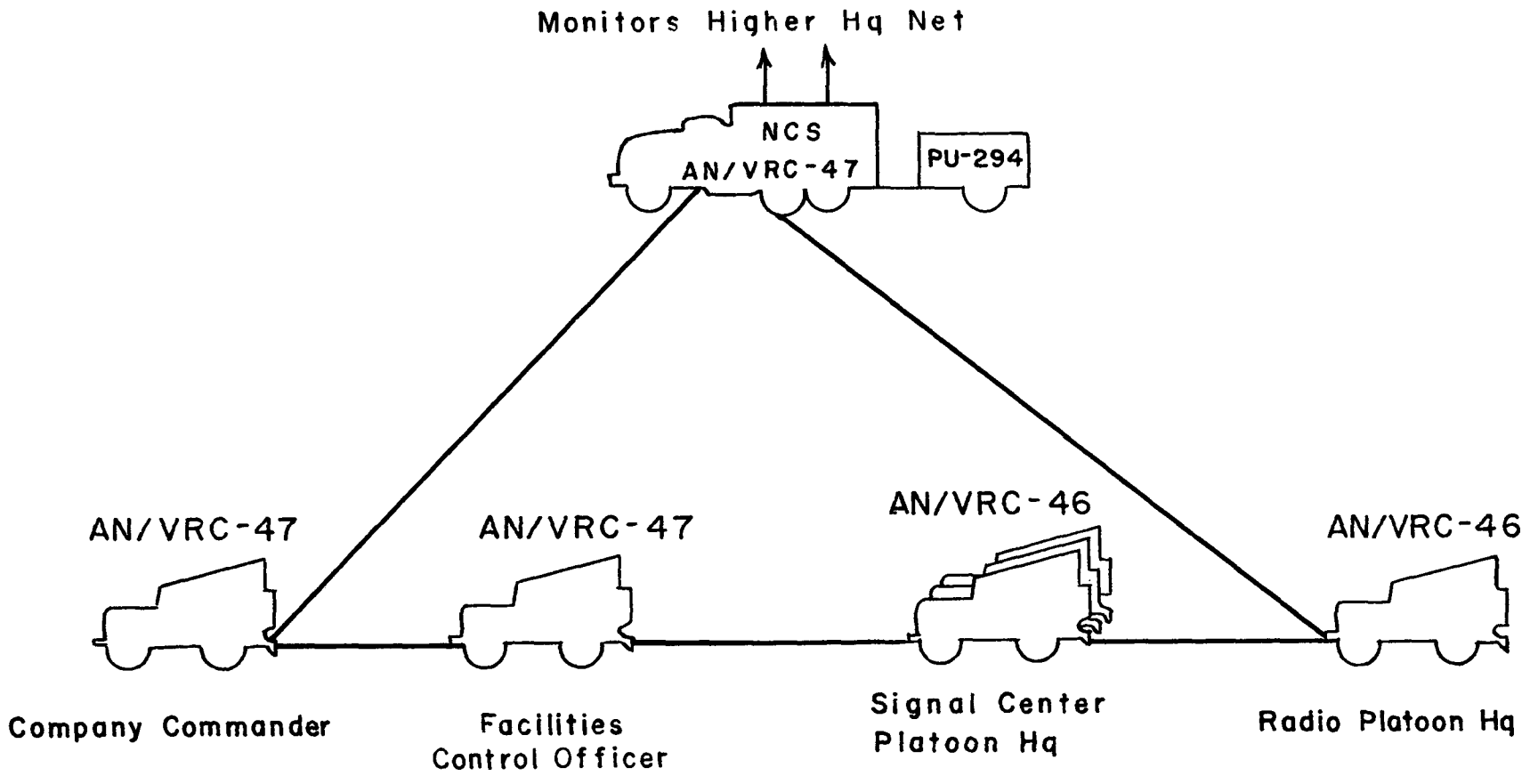

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Figure 5. Type company command and operations net, signal support company.

CHAPTER 4

COMPANY ADMINISTRATIVE OPERATIONS

31. General

The organization and employment of the signal support company generates command and administrative problems since the dispersion of the platoons adds to the difficulty of performing administrative functions. The company commander should exert every effort to visit each platoon as often as possible to coordinate operations and solve administrative problems. The company commander should never become tied to the company headquarters at the expense of performing command visits and inspections of his units' communications sites. In addition to command visits and inspections the company commander must keep the platoon leaders advised of command policies and procedures. The most common method of coordinating with subordinates is to issue timely orders and to prepare and distribute a detailed SOP. Details of preparation of SOP's are contained in FM 24–16, Signal Orders, Records, and Reports.

32. Company Command Post

The company command post (CP) normally is collocated with the headquarters echelon of one of the units being supported. Since the company commander is not provided with staff officers to assist him in the operation of the company headquarters he must rely on his noncommissioned officers. The noncommissioned officers are: the first sergeant, supply sergeant, motor sergeant, and mess steward.

33. Personnel Management

Platoons and sections in support of various units must effect daily coordination between the platoon leaders and the company headquarters. The platoon leaders must keep the company headquarters advised of the current personnel situation such as personnel for duty, on sick call, duty roster, morale, and general condition of the platoon or section. Conversely the company commander must keep the platoon leaders advised on such personal matters as leaves, pay, mail, promotions, etc. Much of this coordination can be accomplished through normal communications channels.

34. Mess Management

When the company is furnishing communications support to two or three separately located headquarters echelons, mess personnel will augment the mess units of the supported headquarters based on the number of personnel provided to the headquarters by the company. The company headquarters is normally collocated with one headquarters echelon and will ordinarily provide mess facilities for the company headquarters, one signal center platoon, the radio platoon headquarters, and the radio operators and electronics maintenance personnel being employed at the collocated headquarters.

35. Company Supply Operations

The acquisition and distribution of supplies are essential to the accomplishment of the company mission. The company commander must be familiar with the status of supplies and equipment within his organization and must plan the logistical support required for continuing operations. He must insure that company supply records are accurate and that supply procedures within the company will provide an adequate steady flow of supplies to the operating platoons. The company commander is assisted in this function by the company supply sergeant. A consolidated supply activity is established at the company CP to insure that each operating platoon has its normal TOE equipment and is provided adequate expendable supplies. The details of company supply may vary according to the deployment of the operating elements; however, these procedures must conform to the provisions of AR 735–35.

a. Company records are established and maintained for TOE property and individual clothing and equipment.

(1) Normally, the company property book is established and maintained by the supply activity at the company CP.

Each platoon or section draws its normal equipment from the company supply activity on hand receipt. If the equipment becomes inoperative due to negligence or fair wear and tear, the equipment is disposed of and replacements drawn according to the procedures of AR 735–35.

(2) The records of individual clothing and equipment are also maintained at the supply activity at the company CP. Each individual soldier is issued clothing and equipment according to the appropriate table of allowances, and each soldier is responsible for the proper care and use of his individual clothing and equipment. Replacements are requested through the supply activity at the company CP.

b. Company records are not required for expendable supplies; however, the company commander should insure that each platoon exercises proper supply economy. Expendable supplies are requested by the operating platoons from the company supply activity at the company CP on an informal basis. The company supply sergeant consolidates these requests and forwards them to the supply activity supporting the company. When the requested supplies are received at the company CP, they are segregated according to each platoon request and delivered.

36. Equipment Maintenance

Maintenance of company equipment is the responsibility of the company commander. All commanders are required to insure that the equipment issued to their commands is properly maintained, and that the equipment is properly used and given proper care. The platoon leaders assume supervisory responsibility for the equipment that is issued to their platoons, and the equipment operators assume direct responsibility for the equipment they operate. The company commander, the platoon leader, the section leader, and the equipment operator all have specific responsibilities for the maintenance and care of government equipment. These responsibilities are designated in appropriate Army Regulations in the AR 750-series.

37. Unit Training

The combat effectiveness of the signal support company will depend on the training of the unit. This training will include individual, section, and platoon training. Normally, a soldier is first trained as a soldier and then as a specialist. Some specialists of the company are school trained while others must be trained in the unit. Common specialists such as cooks, clerks, truck drivers, and mechanics may be trained in unit schools, training centers, or service schools. However, these specialists must receive on-the-job refresher training to retain their skills.

a. A newly activated unit can get much of their training support from the G–3 section of the post, camp, or station responsible for their training. The support will include training literature, training areas, training aids, and, in some cases, instructor support.

b. The company commander will be assisted in his training program through the use of Army training programs (ATP's), Army training tests (ATT's), field manuals (FM's), and equipment technical manuals (TM's). The training literature manuals that are applicable to the signal support company are shown in appendix I.

38. Company Security

The security of the signal support company is a command responsibility. However, because of the deployment of the operating platoons the company commander may require the platoon leaders to execute the security responsibility of their platoon areas. Security of signal installations is provided by the headquarters or unit supported. However, this does not relieve the company commander or the platoon leaders of the responsibility for the protection of signal installations, signal equipment, or signal personnel. Some of the aspects of security that must be considered are:

a. The camouflage or concealment for installations against air, ground, CBR, and nuclear attack.

b. The use of natural obstacles such as rivers, forests, swamps, and mountains.

c. The use of guard posts and alarm systems.

d. Protective measures to be taken before, during, and after nuclear, chemical, and biological attack.

39. Motor Movement

a. Normally, the movement of the signal support company, or separate platoons of the company, will be under the supervision and control of the movement officer of the higher headquarters. The company commander or platoon leader will be required to load his vehicles, form march columns, and move as directed by the movement officer. To facilitate the movement of the company or separate platoons, a loading plan for company vehicles should be developed.

b. In addition to loading vehicles for the move, the company commander or platoon leader must coordinate details of the move with the movement officer. Normally, the movement officer will give the company commander or the platoon leader such details as company or platoon position in the march column, time of march formation, initial point, route of march, rate of march, and release point.

40. Company Standing Operating Procedures (SOP)

An SOP is a set of tactical and administrative instructions which the commander wishes to make routine. SOP's are a form of combat orders; thus, the SOP eliminates the necessity for repeating the details of instructions in orders for each operation. Normally an order will refer to the SOP unless the procedures for an operation are contrary to the procedures contained in the SOP. In such cases, the procedures must be detailed in the order.

a. The amount of detail in the SOP will depend on the training and experience of the unit. Normally, the initial SOP, prepared during the training phase of the unit, will be detailed and as the unit becomes experienced the SOP becomes less detailed.

b. The SOP of a unit is based on the SOP of the next higher echelon of command. This is necessary to standardize procedures as much as possible.

c. The SOP of a unit should be continually revised and refined to eliminate unnecessary details and to change procedures to adjust to a change in organization, operations, or the tactical situation.

d. The details of preparation of the signal SOP are contained in FM 24–16.

APPENDIX I

REFERENCES

1. General

This appendix contains a selected list of publications pertinent to the operations of the signal support company. For availability of items listed and other publications on additional subjects, refer to DA Pamphlets 310–1, 310–3, and 310–4. (Equipment publications (TM's) are listed under *nomenclature* in appendix II.)

2. Army Regulations (AR)

230–5	Non-Appropriated Funds and Related Activities; General Policies
320–5	Dictionary of United States Army Terms
320–50	Authorized Abbreviations and Brevity Codes
340–15	Correspondence
350–1	Army Training Policies
380–5	Safeguarding Defense Information
380–40	Safeguarding Cryptomatter
380–41	Control of Cryptomaterial
711–16	Installation Stock Control and Supply Procedures
735–5	Property Accountability, General Principles and Policies
735–11	Accounting for Lost, Damaged, and Destroyed Property
735–35	Supply Procedures for TOE Units, Organizations, and Non-TOE Units
750–5	Organizations, Policies, and Responsibilities for Maintenance Operations
750–8	Command Maintenance Management Inspections
750–610	Communications Security Equipment Maintenance

3. Army Training Programs (ATP)

11–117	Signal Support Company

4. Army Training Tests (ATT)

11–117	Signal Support Company

5. Department of the Army Pamphlets (DA Pam)

108–1	Index of Motion Pictures, Film Strips, Slides and Phono-Recordings
310–1	Index of Administrative Publications
310–2	Index of Blank Forms
310–3	Index of Doctrinal Training and Organizational Publications
310–4	Index of Technical Manuals
310–31	Military Publications; Index of Supply Manuals, Signal Corps

6. Field Manuals (FM)

3–12	Operational Aspects of Radiological Defense
9–30	Maintenance Battalion, Division Support Command
10–50	Supply and Transport Battalion, Division Support Command
11–8	Field Radio Relay Techniques
11–21	Tactical Signal Communications System, Army, Corps, and Division
11–86	Combat Area Signal Battalion, Army
11–92	Corps Signal Battalion
11–95	Army Signal Battalion
21–5	Military Training Management

21–6	Techniques of Military Instruction
21–30	Military Symbols
21–40	Small Unit Procedures in Chemical, Biological, and Radiological (CBR) Operations
21–41	Soldier's Handbook for Chemical and Biological Operations and Nuclear Warfare
21–48	Chemical, Biological, and Nuclear Training Exercises and Integrated Training
24–16	Signal Orders, Records, and Reports
24–17	Tactical Communications Center Operations
24–18	Field Radio Techniques
24–20	Field Wire and Field Cable Techniques
24–150 (C)	Electronic Warfare (U)
31–25	Desert Operations
31–30	Jungle Operations
31–71	Northern Operations
31–72	Mountain Operations
32–5 (CM)	Communications Security (U)
33–5	Psychological Operations
61–100	The Division
100–1 (S)	Doctrinal Guidance (U)
100–5	Field Service Regulations; Operations
100–10	Field Service Regulations; Administration
100–11	Signal Communications Doctrine
101–5	Staff Officers' Field Manual; Staff Organization and Procedures
101–10	Organizational, Technical, and Logistical Data: Part I—Unclassified Data
101–10–2	Staff Officers' Field Manual; Organizational, Technical, and Logistical Data: Part II—Extracts of Tables of Organization and Equipment

APPENDIX II

CHARACTERISTICS OF SIGNAL EQUIPMENT

This appendix covers briefly the major items of signal equipments organic to the signal support company (TOE 11–117). The information presented is intended for signal users and planners at support company level. More detailed technical information may be obtained from appropriate equipment technical manuals; these manuals are listed in the appendix under the "nomenclature" column. Note that throughout this appendix, multi-part equipment technical manuals are listed without indication as to the echelons of maintenance; for example, a "TM 11–5820–222–" listing actually represents all of the technical manuals published on that particular equipment. (E.G., TM 11–5820–222–10, –20, –20P, –35, and –35P. Refer to DA Pam 310–4.)

Also included is a list of signal equipments by type number and their TOE allocation in the signal support company.

Signal Equipments by Type Number and TOE Allocation

(Equipment are listed alphabetically by type number in table following this listing)

Type No.	*TOE Allocation*
AN/GRC–26	6 ea RATT Sec
AN/GRC–46	6 ea RATT Sec
AN/GRC–106	6 ea Rad Sec
AN/GRM–55	2 ea Elct Maint Sec
AN/GSQ–80	1 ea COMMCEN Sec
AN/MCC–6	2 ea RadRel & Carr Sec
AN/MRC–54	2 ea RadRel & Carr Sec
AN/MRC–73	2 ea RadRel & Carr Sec
AN/MSC–29	1 ea COMMCEN Sec
AN/MSC–32	1 ea Co Hq
AN/MTC–1	1 ea Wire Ops Sec
AN/PRC–25	3 ea Rad Sec
AN/TSM–16	2 ea Elct Maint Sec
AN/TXC–1	1 ea COMMCEN Sec
AN/URM–25	2 ea Elct Maint Sec
AN/URM–100	2 ea Elct Maint Sec
AN/USM–50	2 ea Elct Maint Sec
AN/USM–159	2 ea Elct Maint Sec
AN/VRC–46	1 ea Sig Cen Plat Hq
	1 ea Rad Plat Hq
AN/VRC–47	3 ea Co Hq
AN/VRM–1	2 ea Elct Maint Sec
CV–2	1 ea COMMCEN Sec
CX–1606/G (1320 ft)	16 ea Cable Instl Sec
CX–4566/G	10 ea Cable Instl Sec
CX–4760/U	5 ea Cable Instl Sec
I–181	1 ea Wire Ops Sec
IM–93/UD	2 ea Co Hq
	2 ea Rad Plat Hq
	2 ea Sig Cen Plat Hq
IM–174/PD	1 ea Co Hq
	1 ea Rad Plat Hq
	1 ea Sig Cen Plat Hq
J–1077/U	4 ea Cable Instl Sec
ME–26/U	2 ea Elct Maint Sec
ME–30/U	2 ea Elct Maint Sec
ME–71/FCC	2 ea Elct Maint Sec
OS–8/U	2 ea Elct Maint Sec
PP–1578/PD	1 ea Co Hq
	1 ea Rad Plat Hq
	1 ea Sig Cen Plat Hq
PU–290/MR	2 ea Elct Maint Sec
PU–294/G	1 ea COMMCEN Sec
	1 ea Co Hq
RL–31/U	2 ea Cable Instl Sec
RL–39	1 ea Co Hq
RL–159/U	3 ea Wire Ops Sec
RL–207/G	2 ea Cable Instl Sec
SB–22/PT	1 ea Co Hq
SG–71/FCC	2 ea Elct Maint Sec
SB–675/MSC	1 ea Wire Ops Sec
TA–236/FT	10 ea Wire Ops Sec
TA–312 PT	10 ea Co Hq
	96 ea Wire Ops Sec
TS–2/TG	1 ea Wire Ops Sec
	2 ea Elct Maint Sec
TS–140/PCM	1 ea Wire Ops Sec
	2 ea Elct Maint Sec
TS–190/U	2 ea Elct Maint Sec
TS–352/U	13 ea Elct Maint Sec
	1 ea Sig Cen Plat Sec
	1 ea Wire Ops Sec
	1 ea Rad Plat Hq
TS–382/U	2 ea Elct Maint Sec
TS–383/GG	2 ea Elct Maint Sec
TV–7/U	1 ea Wire Ops Sec
	2 ea Elct Maint Sec
WD–1/TT on DR–8 (¼ Mile)	4 ea Co Hq

Nomenclature	Description	Remarks
Radio Set AN/GRC–26 TM 11–264B TM 11–5820–256	A mobile AM radio set with facilities for the transmission and reception of fsk radio teletypewriter and voice signals over a frequency range of 1.5–20 mc. Capable of full-duplex, half-duplex, one-way reversible, or closed loop operation. Voice transmission may be used alone or simultaneously in voice and teletypewriter operation. Range: RATG (fsk) 250 mi (401 km); voice: 100 miles (160.9 km).	Requires 105 or 125 volts ac, to —60 cps, for operation. Power output is 400 watts RATG or fsk. Installed in Shelter S–56/G and includes trailer-mounted Generator Set PU–474/M. Can be mounted on 2½-ton truck. Employed throughout the combat zone.
Radio Teletypewriter Set AN/GRC–46 TM 11–5815–204	A mobile AM radio set providing separate or simultaneous transmission and reception of voice, CW, or fsk radio teletypewriter signals over a transmission frequency of 1.5–20 mc and a reception frequency range of 0.5–32 mc. Range: 50 miles (80 km) ground wave; 1000 mi (1609 km) sky wave.	Requires 28 volts dc for operation. Power output is 100 watts. Installed in Shelter S–89/G or S–144/G. Employed throughout the combat zone.
Radio Set AN/GRC–106	A high power radio set which transmits and receives single-sideband (upper sideband only) AM voice (compatible AM) and CW signals over a frequency range of 2–30 mc. Requires 24 volts dc for operation. Intended for vehicular installation. Requires appropriate installation kit. Power obtained from vehicular electrical system. Range: 50 mi (80 km).	Power output is 200 watts AM voice, CW and fsk; 400 watts PEP for SSB voice. Employed throughout the combat zone.
Test Set, Electronic Circuit Plug-in Unit AN/GRM–55 TM 11–6625–514	Portable equipment designed to make tests at all available test points of Receiver-Transmitter RT–505/PRC–25 and to isolate a failure to a particular module.	Operates from power of set being tested. Used by organizational personnel responsible for maintaining Radio Set AN/PRC–25.
Message Center AN/GSQ–80	A basic shelter (Electrical Equipment Shelter S–141( )/G) designed specifically for message center operations. Shelter contains separately installed power and signal wiring, a power distribution panel, intercommunication equipment, essential furniture, and various other items essential to the operation of the message center supporting a large headquarters establishment.	Designed for mounting on 2½-ton truck.
Terminal, Telegraph-Telephone AN/MCC–6 TM 11–2139 TM 11–5805–247 TM 11–5805–250 TM 11–5815–206	A mobile, carrier frequency, telegraph-telephone terminal capable of providing 24 telephone circuits or 24 telephone circuits plus 16 voice frequency telegraph circuits over spiral–4 cable (CX–1606/G) or wide-band radio circuits. Includes two Telegraph Terminals AN/TCC–4, two Telephone Terminals AN/TCC–7, one Teletypewriter TT–4A/TG, and other equipment.	Installed in Shelter S–185/MCC–6 and includes trailer-mounted Generator Set PU–474/M. Can be mounted on 2½-ton truck. Used with Radio Repeater Set AN/MRC–54(V). Employed at army and corps level.
Repeater Set, Radio AN/MRC–54(V) TM 11–5820–203 TM 11–5820–287	A mobile, high quality, VHF–UHF FM radio relay repeater used in conjunction with Radio Terminal Set AN/MRC–69(V) as a repeater or with Telephone Terminal AN/	Power output is 75 watts. Basically consists of three Radio Sets AN/TRC–24 installed in Shelter S–177/MRC–54(V) and trailer-

Characteristics of Signal Equipment—Continued

Nomenclature	Description	Remarks
	MCC–6 as a terminal. Depending on terminal used, provides 12 or 24 voice channels for telephone, teletypewriter, facsimile, or data circuits. Frequency range is 100–400 mc. Range: 25–30 mi (40–48 km) line-of-sight; 200 mi (321 km) in a radio relay system. Maximum of 8 hops per system.	mounted Generator Set PU–474/M. Can be mounted on 2½-ton truck. Employed throughout the combat zone.
Radio Terminal Set AN/MRC–73 TM 11–2139 TM 11–5805–250 TM 11–5820–287 TM 11–5895–221	A mobile, FM radio relay terminal set providing 12 channels of carrier telephone or 11 channels of carrier telephone and four channels of carrier telegraph over spiral–4 cable or radio. May be operated as a single radio terminal, or as a telephone or telegraph terminal. Frequency range—100–400 mc. Range: 25-30 mi (40–48 km) line-of-sight; 200 mi (321 km) in a radio relay system. Maximum of 8 hops per system.	Power output is 75 watts. Installed in Shelter S–181/MRC–73 and includes trailer mounted Generator Set PU–474/M. Can be mounted on 2½-ton truck. Composed of Radio Set AN/TRC–24, Telephone Terminal AN/TCC–7, and Telephone Terminal AN/TCC–20. Employed at corps and field army level.
Terminal, Telegraph AN/MSC–29 TM 11–2225 TM 11–5805–262 TM 11–5815–206 TM 11–5895–205	A mobile telegraph terminal providing three full-duplex or six half-duplex secure teletypewriter circuits. Also provides switching facilities for 16 subscriber telegraph circuits. Includes eight Teletypewriter-Reperforator-Transmitters TT–76B/GGC, four Teletypewriters TT–4A/TG, one Manual Telephone Switchboard SB–22A/PT, communication security equipment, and other items.	Installed in Shelter S–176/MSC–29 and includes trailer-mounted Generator Set PU–294/G. Can be mounted on 2½-ton truck. Employed throughout the combat zone.
Operations Central AN/MSC–32 TM 11–5895–224	A mobile operations central with complete facilities for planning, engineering, and controlling an army area communications system. Includes Teletypewriter Reperforator-Transmitter TT–76B/GGC, Manual Telephone Switchboard SB–22A/PT, four Telephone Sets TA–312/PT, two Teletypewriters TT–4A/TG, and three Telegraph Terminals TH–5/TG.	Installed in Shelter S–184/MSC–32. Can be mounted on 2½-ton truck. May be used in conjunction with Communications Operations Center AN/MSC–31. Employed throughout the combat zone.
Central Office Telephone, Manual AN/MTC–1 TM 11–5805–284	A mobile, three position, manual telephone central office capable of interconnecting 180 local or common battery telephone circuits and 20 manual or dial trunk circuits.	Composed of Telephone Switchboard Group AN/MTA–3 and Telephone Connecting and Switching Group AN/MTA–4 installed in Shelter S–179/MTA–3 and S–180/MTA–4. Can be mounted on 2½-ton trucks. Includes one trailer-mounted Generator Set PU–474/M. Employed at corps and army levels.
Radio Set AN/PRC–25 TM 11–5820–398	A short range, transistorized, battery operated FM radio receiver-transmitter used for two-way radio-telephone voice communication over a frequency range of 30–75.95 mc. Can be used for receive-transmit, remote, or retransmission operations.	Uses dry batteries. Uses dry Battery BA–236/PRC–25. Power output is 1.5 to 2 watts. Replaces Radio Sets AN/PRC–8, –9, and –10. Designed for Man-Pack use. When required for ve-

Characteristics of Signal Equipment—Continued

Nomenclature	Description	Remarks
	Range: 3–5 mi (4.8–8 km).	hicle and man-pack use, use AN/VRC–125 and for vehicle use only, AN/VRC–53.
Frequency Meter AN/TSM–16 TM 11–6625–218	A portable, self-contained precision instrument used in checking audio frequencies and in the maintenance of carrier telephone, telegraph, and teletypewriter equipment, and to test and measure their generated frequencies. Used to count events within the 20 cps-1 mc range.	Requires 115 volts ac, 60 cps or 230 volts ac, 360–440 cps for operation. Can be operated under extreme temperature conditions. Employed throughout the combat zone.
Facsimile Set AN/TXC–1 TM 11–2258	Transmits or receives pictures, maps, or messages in sizes up to 12 by 18 11/16 inches. Transmission time is 20 minutes per page. Requires one radio or wire voice circuit.	Employed throughout the combat zone.
RF Signal Generator Set AN/URM–25( ) TM 11–5551	A portable, rugged, test equipment used for generating radio frequency signals, either modulated or unmodulated, over a continuous range of frequencies from 10 kc to 50 mc.	Requires 115 volts ac, 50 to 1600 cps, for operation. Employed throughout the combat zone.
Generator, Signal AN/URM–103	A table mounted instrument which provides FM signals from 18–80 mc for servicing FM radio sets at third and higher echelons of maintenance.	Requires 115 to 230 volts ac, 50 to 450 cps, for operation. To replace Signal Generator AN/URM–48. Employed throughout the combat zone.
Oscilloscope AN/USM–50 TM 11–5129	A wide range, high gain, portable or rack mounted test instrument used for observation of pulses, short-period electrical disturbances, sine waves, and complex wave forms.	Requires 103.5 to 126.5 volts ac, 50 to 1000 cps, for operation. Employed at division and corps levels.
Frequency Meter AN/USM–159 TM 11–6625–486	A transistorized, battery operated instrument which provides the means for generating or measuring frequencies in the range of 125 kc–1000 mc with an accuracy of 0.01%.	Requires 115 or 230 volts ac, 50 to 450 cps, or 9 volts dc from internal battery. To replace Frequency Meter AN/URM–32. Used with various airborne and general ground installations. Employed throughout the combat zone.
Radio Set AN/VRC–46 TM 11–5820–401	Same as Radio Set AN/VRC–43, except has manually tuned frequency selection and is not capable of remote selection of frequencies. Includes Receiver - Transmitter RT–524/VRC. Frequency range is 30–75.95 mc. Range: 20 mi (32 km) stationary; 15 mi (24 km) moving.	Requires 24 volts dc for operation. Power output is 25–35 watts. Replaces Radio Set AN/GRC–3 through –8. Employed within and between armored, artillery, and infantry units in the combat zone.
Radio Set AN/VRC–47 TM 11–5820–401	Same as Radio Set AN/VRC–12 except has manually tuned frequency selection. Does not have intercom facilities and is not capable of remote selection of frequencies. Includes Receiver-Transmitter RT–524/VRC	Requires 24 volts dc for operation. Power output 25–35 watts. Replaces Radio Sets AN/GRC–3 through –8. Employed within and between armored, artillery,

Nomenclature	Description	Remarks
	and Auxiliary Receiver R–442/VRC. Frequency range is 30–75.95 mc. Range: 20 mi (32 km) stationary; 15 miles (24 km) moving.	**and infantry units in the combat zone.**
Test Set, Radio AN/VRM–1 TM 11–6625–496	A compact, lightweight, waterproof test set designed for testing the plug-in modules of Radio Sets AN/VRC–12 and AN/VRC–43 through –49.	**Requires 28 volts dc for operation. Designed on "go" and "no go" basis with green light for serviceable module and red light for defective module. Used by radio repairmen or radio mechanics for organizational maintenance of the AN/VRC–12 family radio sets.**
Converter, Signal Data, CV–2( )/TX TM 11–2252A	A self-contained, fixed plant of tactical device which converts AM facsimile signals to FM or DC.	Used with facsimile sets requiring one voice circuit for operation. Employed throughout the combat zone.
Cable Assembly Telephone CX–1606/G (1320 ft or 402 meters) TM 11–381	One quarter mile (402 meters) of Telephone Cable WF–8/G (spiral–4 cable) with a universal connector at each end for rapid connecting and disconnecting. Assemblies are connected together to form desired length. Designed as the transmission medium for four-channel and 12-channel carrier telephone systems. Has 1.25 db loss per mile (1.6 km) non-loaded; 0.725 db loss per mile (1.6 km) loaded.	When used with Telephone Loading Coil Assembly CU–260/G, it provides transmission medium for a 4-channel carrier system and when used without loading coil, it provides a 12-channel transmission medium. Employed throughout the combat zone.
Telephone Cable Assembly CX–4566/G TM 11–5895–225	Two hundred and fifty feet (76.2 meters) of general purpose 26-pair cable with universal connectors on both ends.	For truck-mounted shelter assemblages. Employed throughout the combat zone.
Test Set I–181 TM 11–6625–202	A portable relay adjusting unit used in measuring and controlling current flow through a relay or similar electromagnetic unit. Also functions as a dc milliammeter.	Employed throughout the combat zone.
Radiacmeter IM–93/UD TM 11–6665–214	A pocket-sized, pen-shaped, general purpose, expendable radiacmeter for detecting and measuring accumulated X and gamma radiation to which wearer has been exposed. Range: 0–600 roentgens per hour.	Employed throughout the combat zone.
Radiacmeter IM–174/PD TM 11–6665–213	A portable, battery operated radiacmeter capable of detecting and measuring beta and gamma radiation together, or gamma radiation alone. Range: 0–500 roentgens per hour.	To replace Radiacmeter IM–108/PD. Employed throughout the combat zone.
Distribution Box J–1077/U TM 11–5805–204 TM 11–5895–225	A weather proof binding post panel for providing access to the pairs in one 26-pair cable (CX–4566/G) at a junction in the cable.	Used for distribution of pairs in 26-pair cables associated with army area assemblages. Employed throughout the combat zone.

Characteristics of Signal Equipment—Continued

Nomenclature	Description	Remarks
Multimeter ME–26C/U TM 11–6625–200	A general purpose, self-contained electron tube multimeter (voltmeter-ohmmeter) used to measure dc voltages, resistance, and ac voltage at frequencies from 20 cps–700 mc.	Requires 115 or 230 volts ac, 60 cps, for operation. Replaces Multimeter TS–505( )/U. Employed throughout the combat zone.
Multimeter ME–30/U TM 11–6625–320	A test instrument used for measuring ac voltages, gain, audio frequency, and radio frequency levels, and hum and noise levels. Capable of measuring ac voltages from 0.001 volts full scale to 300 volts full scale over a frequency range of 10 cps to 4 mc.	Requires 105 to 125 volts ac or 210 to 250 volts ac, 50 to 1000 cps, for operation. Employed throughout the combat zone.
Meter, Audio Level ME–71B/FCC TM 11–2151	A test instrument designed to measure the radio frequency carrier level on carrier telephone system lines. Permits the measurement of voltages in the frequency range of 20 kc–500 kc.	Employed throughout the combat zone.
Oscilloscope OS–8/U TM 11–1214	A compact, rugged, portable test instrument designed to display, meter, and plot the characteristics of a varying electrical potential. May be used to align and test electronic and electrical equipment.	Requires 115 volts ac, 50 to 1000 cps, for operation. Employed throughout the combat zone.
Charger, Radiac Detector PP–1578/PD TB 213–34	A hand carried portable unit which provides an electrostatic charge, by rotation of rotor with the fingers, for a radiacmeter which is inserted into the charger.	Used to charge all United States dosimeters; with an adapter, can charge all United Kingdom dosimeters. Employed throughout the combat zone.
Generator Set, Gasoline Engine Trailer Mounted PU–290/MR TM 11–6115–222	Consists of one PE–95, one 1½-ton trailer and other equipments. Provides 10 kw, 120 volts, 60 cycles ac power.	Used throughout the combat zone as a mobile power source for various communications equipment.
Generator Set, Gasoline Engine Trailer Mounted PU–294/G TM 11–6115–223	Consists of two Gasoline Engine Generator Sets PU–286/G mounted in 1½-ton trailer, plus ancillary equipment. Provides 5 kw, 120 volts, 60 cycles ac power.	Only one generator used at a time; the other is on standby. Employed throughout the combat zone as a mobile power source to operate communications and similar electronic equipment.
Reeling Machine, Cable, Hand RL–31E TM 11–362	A collapsible type A-frame with one divided axle for manual wire laying and pickup. Holds two Wire Reels RL–159/U, one Cable Reel DR–5, one Cable Reel DR–15B, or one Cable Reel DR–7. Includes two crank handles for recovering wire and two brake units.	Accommodates reels up to 27½ inches in diameter and 18 inches wide. Can be used as a carrying cradle or used on the tailgate of a vehicle or on the ground. Replaced by engine driven Cable Reeling Machine RL–172/G in forward areas only. Employed throughout the combat zone.
Reeling Machine, Cable, Hand RL–39 SB 11–100–43	A portable, single axle, collapsible hand reel for manually laying and recovering ¼ mile (402 meters) of Field Wire WD–1/TT from Spool DR–8A. Includes crank for recovering wire.	Employed throughout the combat zone.

Characteristics of Signal Equipment—Continued

Nomenclature	Description	Remarks
Wire Reel RL–159/U TM 11–360 FM 24–20	Steel reel used to hold one mile (1.61 km) of Field Wire WD–1/TT.	Employed throughout the combat zone.
Reeling Machine, Cable, Engine Driven RL–207/G TM 11–3895–209	A three hp gasoline engine driven, two axle reel unit designed to pick up and pay out Field Wire WD–1/TT. Holds four Wire Reels RL–159/U, two per axle, or two Cable Reels DR–15B, one per axle. Includes auxiliary hand driving facilities.	Primarily intended to be mounted on ¾-ton or larger vehicle but can be used on the ground. Flexible belts are used to obtain the desired reel speed. Employed throughout the combat zone.
Switchboard, Telephone, Manual SB–22/PT TM 11–5805–262	A portable, local battery, monocord switchboard capable of connecting 12 local battery telephone circuits, remote controlled radio circuits, or voice frequency teletypewriter circuits.	Uses four RA–30 batteries. Two or three additional SB–22/PT's can be used to increase line capacity from 12 to 29 or 46 lines, respectively. Employed throughout the combat zone.
Generator, Signal SG–71/FCC TM 11–5088	A portable test instrument which generates sine-wave signals of medium power over the frequency range of 50 cps–500 kc. Used as a generator of test signals in measuring the band width, attenuation, or amplification of telephone carrier systems. Also used for signal tracing, wave form analysis, distortion measurement, and acoustical tests.	Requires 115 or 230 volts ac, 50 to 60 cps, for operation. Employed throughout the combat zone.
Panel, Patching Communication SB–675/MSC TM 11–5895–225	A versatile, mobile, circuit control facility capable of connecting thirty-six 26-pair cables (CX–4566/G) and 24 field wire pairs (WD–1/TT). Testing and monitoring facilities for voice and teletypewriter circuits are integral. Includes one Manual Telephone Switchboard SB–22A/PT, one Teletypewriter TT–4A/TG, and other equipment.	Installed in Shelter S–189/MS. Can be mounted on 2½-ton truck. Employed at corps and field army levels.
Telephone Set TA–236/FT TM 11–468 TM 11–5805–242	A general purpose, anti-sidetone, common battery, desk type dial telephone set for use in either dial or manual operation.	Designed for indoor use as a desk set.
Telephone Set TA–312/PT TM 11–2155	A rugged, lightweight, waterproof, battery-operated telephone set designed for local battery, common battery, or common battery signaling operation. Range: 14–22 mi (22.5–35.4 km) using non-loaded WD–1/TT with 36 db loss.	Uses two BA–30 batteries. Employed throughout the combat zone.
Test Set, Teletypewriter TS–2/TG TM 11–2208	A portable unit arranged to transmit normal or distorted signals used in testing teletypewriter circuits and equipment.	Requires 115 volts ac, 50 or 60 cps, for operation. Equipped with a governed motor that can be adjusted for operation with British equipment. Employed throughout the combat zone.
Test Set TS–140 PCM TM 11–2096	A portable transmission measuring unit used in matching circuits of a wire or a wire-radio communications circuit and in testing	Requires 115 or 230 volts ac, 50 to 60 cps, for operation. Consists of a signal generator and a

Characteristics of Signal Equipment—Continued

Nomenclature	Description	Remarks
	carrier and voice frequency repeater and terminal equipment. Frequency range is 200–35,000 cps.	decibel meter. Employed at division and corps levels.
Test Set TS–190/U TM 11–6625–302	Test equipment used in checking spiral–4 carrier terminal and repeater stations. Used to detect the presence of battery or ground at point within a telephone or telegraph circuit or to detect differences in voltage between points within a circuit. Also used for monitoring or for making continuity tests on working circuits without interfering with service.	Employed on distributing and apparatus frames in manual and dial central offices. Employed throughout the combat zone.
Multimeter TS–352/U TM 11–5527	A general purpose, multirange, battery-operated circuit analysis and trouble-shooting instrument for measuring dc and ac voltages, direct current, and resistance.	Requires one 1.5 volt battery BA–30 and three 4.5 volt batteries BA–31. Gives accurate and reliable readings on all ranges under extreme temperaure and humidity conditions. Employed throughout the combat zone.
Generator, Signal TS–382/U TM–11–6625–261	A portable audio oscillator providing a sine-wave output voltage over its frequency range of 20–200,000 cps. Used for making voltage gain tests, measuring distortion, and checking frequency response of wide-band audio amplifiers. Also used for modulating radio frequency oscillators and check ing equipment operating at supersonic frequencies.	Requires 115 volts ac, 50 to 1600 cps, for operation. Contains a thermostatically controlled heater for low temperature conditions.
Test Set, Teletypewriter TS–383/GG TM 11–2217	A portable motor driven unit used in testing teletypewriter start-stop printing telegraph circuits and start-stop selectors.	Requires 110 to 115 volts ac, 60 cps, for operation. Employed throughout the combat zone.
Tube Tester, Electron Tube TV–7/U TM 11–6625–274	A portable tube tester used to test and measure the performance capabilities and to determine the rejection limits of electron tubes in radio receivers, low power transmitters, and many other electronic devices.	Requires 103.5 to 126.5 volts ac, 50 to 1000 cps, for operation. Used to test vacuum tube for shorts, noise, gas, emission (rectifier tubes), and dynamic mutual conductance (amplifier tube). Employed throughout the combat zone.
Wire WD–1/TT SB 11–100–154	General purpose, twisted pair, polyethylene jacketed field telephone wire packaged as follows: ¼ mi (402 meters) on Spool DR–8A, ½ mi (804 meters) on Wire Dispenser MX–306A/G, one mi (1.6 km) on Wire Reel RL–159/U, and 2½ mi (4 km) on Cable Reel DR–5. Range: 12–24 mi (19.3–38.6 km).	Employed throughout the combat zone.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

OFFICIAL:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

DCSPER (2)
ACSI (2)
DCSLOG (2)
DCSOPS (2)
ACSFOR (2)
CORC (2)
CRD (1)
COA (1)
CINFO (1)
TIG (1)
TJAG (1)
TPMG (1)
TSG (1)
OPO (1)
CNGB (1)
CC–E (5)
CofEngrs (3)
CofCh (1)
Dir of Transportation (3)
USACDCADA (1)
USACDCCARMA (5)
USACDCCARMSA (10)
USACDCARTYA (5)
USACDCAVNA (2)
USACDCCBRA (2)
USACDCCEA (5)
USACDCEA (2)
USACDCIA (5)
USACDCINTA (2)
USACDCCHA (5)
USACDCMSA (5)
USACDCMPA (5)
USACDCOA (5)
USACDCQMA (5)
USACDCTA (5)
USACDCFINA (5)
USACDCCAA (5)
USACDCSWA (5)
USACONARC (10)
USACDC (10)
USAMC (15)
USARADCOM (10)
LOGCOMD (5)
OS Maj Comd (5)
MDW (5)
Armies (25)
Corps (15)
Div (10)
Div Arty (5)
Bde (5)
Regt/Gp (5)
CC (5)
Bn (5)
Co/Btry (2)
USACDCIAS (1)
USACDCCAG (5)
USACDCCSSG (5)
USACDCSWG (5)
USACDCNG (1)
USACDCCISG (1)
Svc Colleges (5) except
USACGSC (25)
USMA (5)
Br Svc Sch (5) except
USASCS (100)
USAES (15)
USACMLCS (10)
USAIS (61)
USAADS (2)
USAINTS (2)
USAAVNS (6)
USAAMS (6)
USAARMS (35)
Units org under fol TOE:
29–1 (5)
29–11 (5)
29–21 (5)
29–51 (5)

NG: State AG (3); units—same as Active Army, except one copy to each unit.

USAR: Same as Active Army, except one copy to each unit.

For explanation of abbreviations used, see AR 320–50.

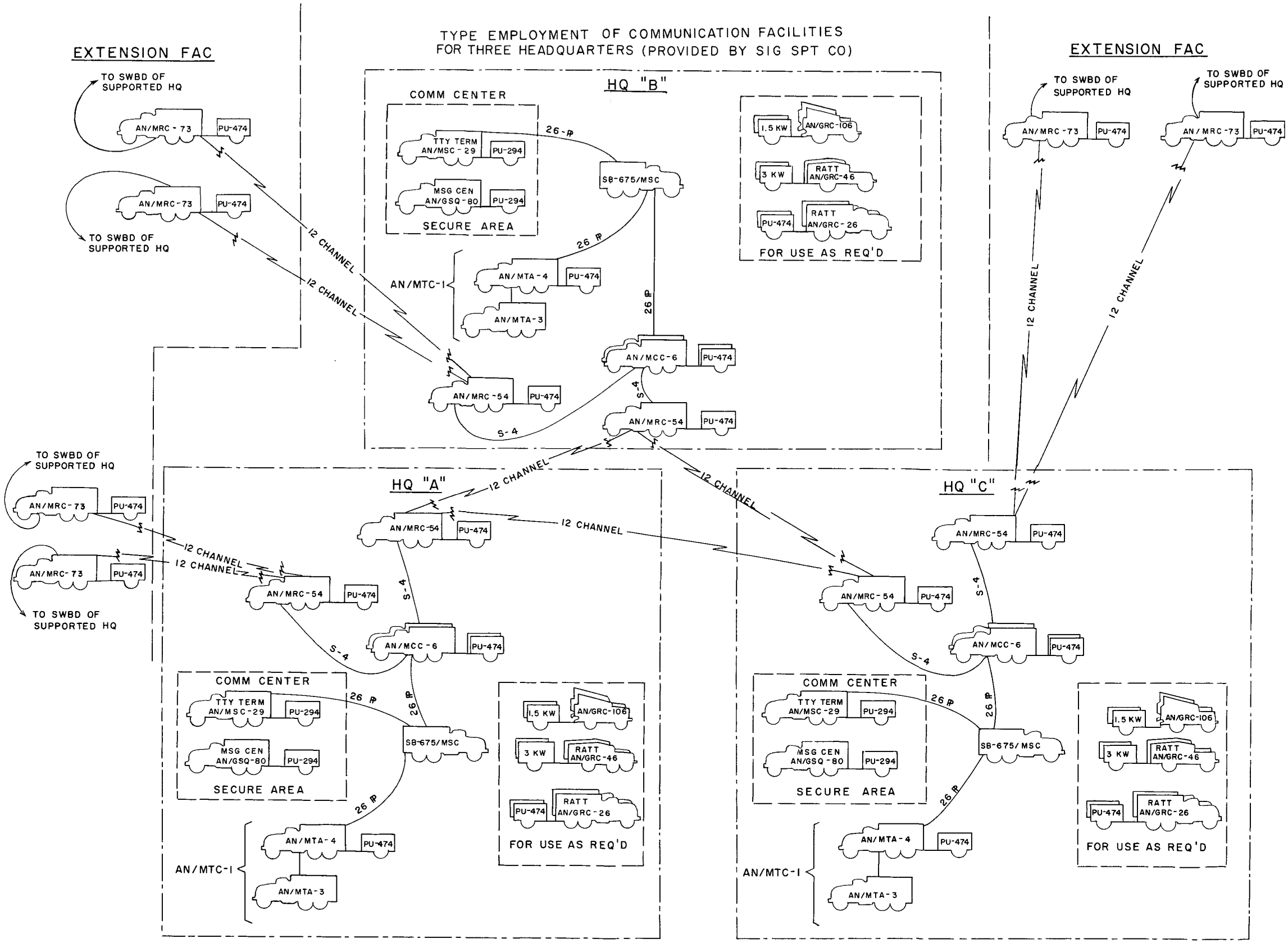

Figure 3. Type employment of communications facilities for three headquarters as provided by the signal support company.